Regional HOT Lanes Network Feasibility Study

APPENDIX B

PRELIMINARY ACCESS PLAN

Prepared for:
Metropolitan Transportation Commission

Prepared by:
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November 2008
(v3)

Introduction

This memorandum describes a preliminary plan for the placement of access and egress points for the proposed Regional HOT Lane Network for the Bay Area. These access and egress points will define toll zones for the system and replace the continuous access currently in use on the HOV lanes in the Bay Area. Defining toll zones will help us understand design constraints and will facilitate the identification and location of the tolling equipment needed for HOT lane operation. This information will then feed into the immediate next steps in the HOT network technical study – refining cost estimates.

The identification of potential access points described in this document is still in an early stage and will subsequently get refined through successive stages of project development. This document is intended to serve as a starting point for discussion with partnering agencies whose guidance will be reflected in the final selection of access and egress locations during this phase of study.

Guidance for specific design treatment associated with access and egress has already been established by Caltrans and CHP and includes the incorporation of transition lanes at each designated access, with separate ingress and egress ramps located such that queues, weaving and merging associated with entering and exiting traffic can be more effectively processed. This report provides general guidance for the location of separate access/egress locations. Separate studies that follow will determine the precise location of each based on roadway design and operational features specific to each site. Note that, due to budget constraints, the current scope calls for separate studies to be performed for selected corridors only in the immediate future.

Approach Taken

The approach taken in this study is that the placement of access and egress points should be primarily demand-driven; that is, access points should be located at a convenient distance downstream of places where large volumes of traffic enter the freeway system and egress points should be located at a convenient distance upstream of places where large volumes of traffic leave the freeway system. Beyond this primary consideration there several secondary criteria were considered:

- The target average spacing between points is five miles, based on experience with HOT lane projects in other cities (Houston, Minneapolis, Denver) that have found that this distance strikes a reasonable balance between user convenience and smooth traffic operations.
- The target maximum spacing is ten miles, with long spacing to be used only for corridors where demand is low for intermediate access.
- No target for minimum spacing was established because in some densely populated areas there appears to be a need to distribute weaving over several access points in order to avoid having excessive volumes at any one point.
- The placement of access points and egress points were considered independently of each other. This was based on Caltrans guidance that access and egress movements should occur at separate locations.

At this stage the emphasis is on identifying the most desirable locations for access and egress points without regard to physical constraints. Once the best locations are identified from a demand perspective then we will determine the engineering feasibility of providing these access and egress points.

Data Sources

The main data source used in the preliminary analysis was the ramps volume data found in Caltrans' 2007 Traffic Volumes Report. This report provided 2006 ADT volumes for most ramps in the Bay Area. However, in some cases 2006 data was not available and so the data from the most recent available year was substituted. Since the locations of highest demand in the system do not vary from year to year we do not believe that a slight mixing of data years will appreciably affect the results of the analysis.

Implicit in the use of this data is the assumption that traffic demand for HOT lanes will show a similar pattern to the traffic demand for general traffic. This appears to be a reasonable assumption given that HOT lane users will be drawn from the general purpose lanes. Moreover, the alternative data source, Caltrans data on existing HOV volumes, is done on a sectional basis using sections that are too long to support this type of analysis.

The consultant team intends to check for any inconsistencies with future year demand. To that end, the team will review future year (2030) travel demand forecasts and welcomes input from the Steering Committee on major planned developments.

Preliminary Results

The results of the preliminary access identification exercise are shown in Figures 1 through 15 for the following corridors:

1) US-101 in Marin and Sonoma Counties
2) US-101 in San Mateo County (Whipple to Millbrae)
3) US-101 in Santa Clara County (south of Cochrane)
4) I-80 in Solano County (north of I-680)
5) I-80 from Solano County to Alameda County
6) I-680 from Solano County to Alameda County
7) I-680 in Alameda and Santa Clara Counties
8) SR-87 in Santa Clara County
9) I-880 in Alameda and Santa Clara Counties
10) SR-17 in Santa Clara County
11) SR-84 in Alameda County
12) SR-4 in Contra Costa County
13) I-580 in Alameda County (from I-680 to I-880)
14) SR-237 in Santa Clara County
15) I-280 in Santa Clara County

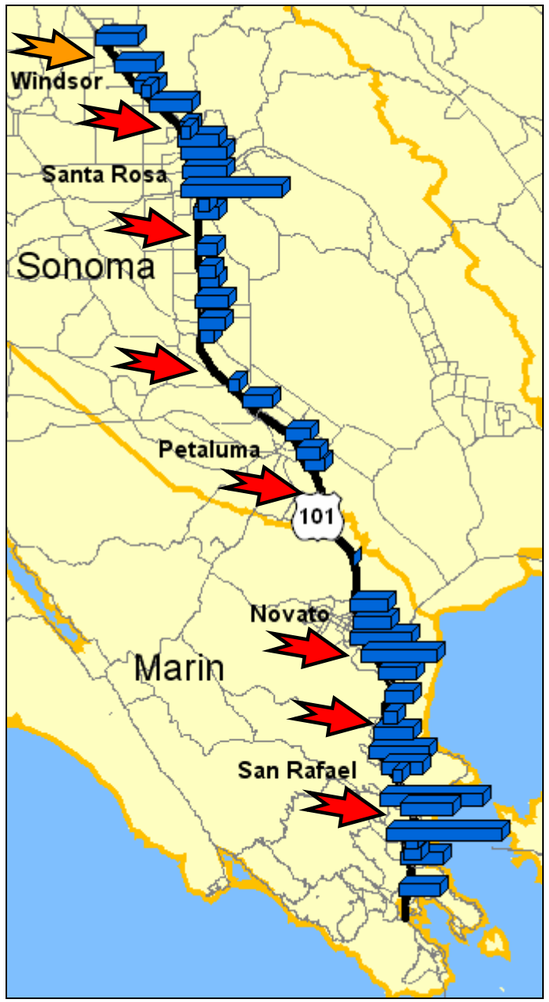
SR-92 is included in study area but did not have a map prepared for it as the only section included in the study area is already a toll road.

The following segments are not mapped and not included in the PB Americas work because other agencies are developing access/egress plans:

- I-580 (from Greenville to I-680 (ALA))
- SR-85 (SCL)
- I-680 southbound (from SR-84 to Calaveras (ALA/SCL))
- US-101 from Cochrane to Whipple (SCL/SM)

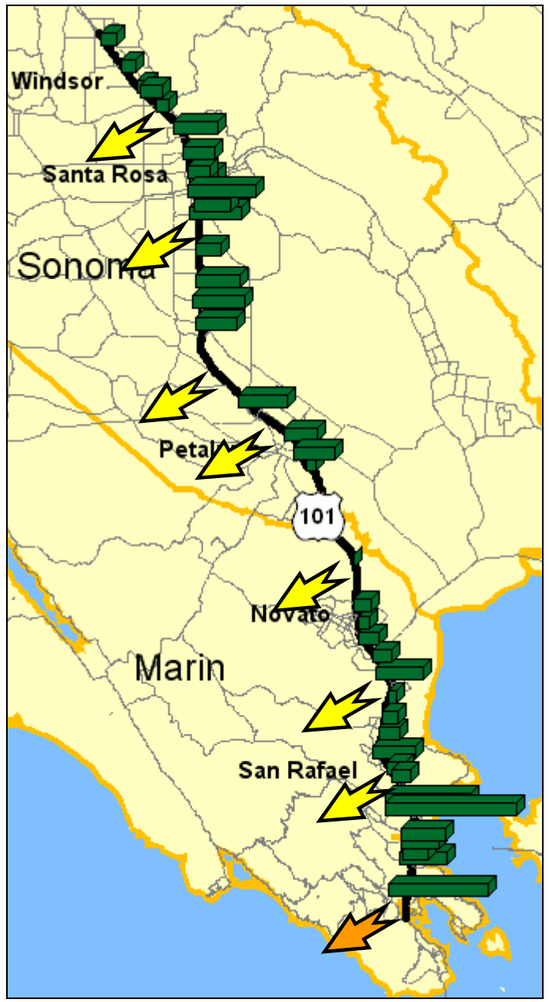
Comments from Participating Agencies

This report was reviewed in draft form by members of the project's Technical Advisory Committee. Their comments are shown in the table below.



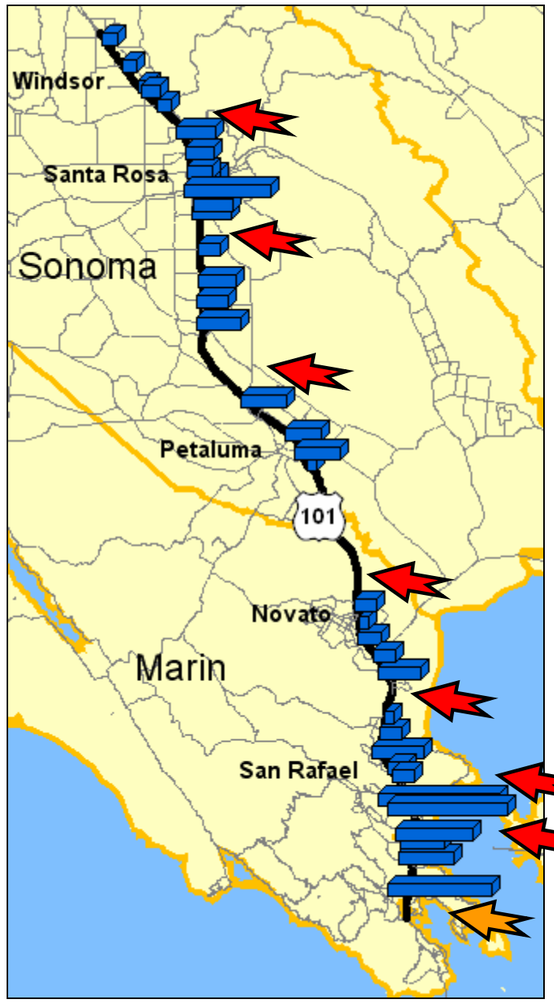
Southbound On-Ramps / Ingress Point

Average Spacing: 6.4 miles
Maximum Spacing: 10 miles



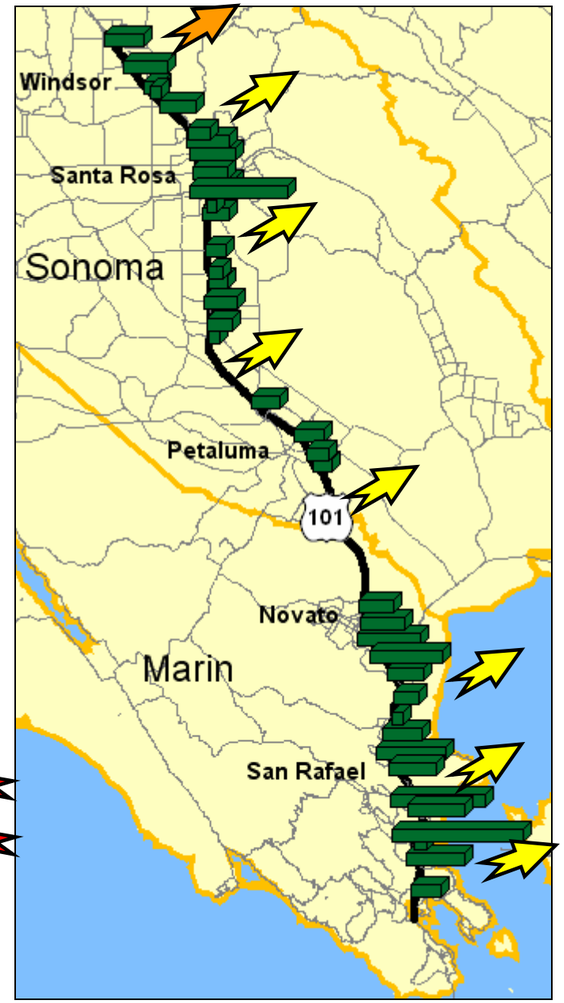
Southbound Off-Ramps / Egress Point

Average Spacing: 6.4 miles
Maximum Spacing: 10 miles



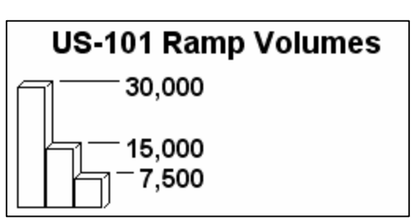
Northbound On-Ramps / Ingress Point

Average Spacing: 6.4 miles
Maximum Spacing: 13 miles



Northbound Off-Ramps / Egress Point

Average Spacing: 6.4 miles
Maximum Spacing: 11 miles



Ingress/Egress at Start or End of HOT Lane

Intermediate Ingress Point

Intermediate Egress Point

Figure 1: On- and Off-Ramp Volumes for US-101 in Marin and Sonoma Counties

Southbound On-Ramps / Ingress Point

Average Spacing: 3.6 miles
Maximum Spacing: 4 miles

Southbound Off-Ramps / Egress Point

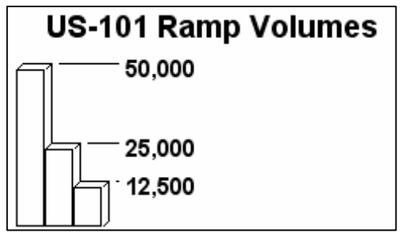
Average Spacing: 3.6 miles
Maximum Spacing: 4 miles

Northbound On-Ramps / Ingress Point

Average Spacing: 3.6 miles
Maximum Spacing: 4 miles

Northbound Off-Ramps / Egress Point

Average Spacing: 3.7 miles
Maximum Spacing: 5 miles

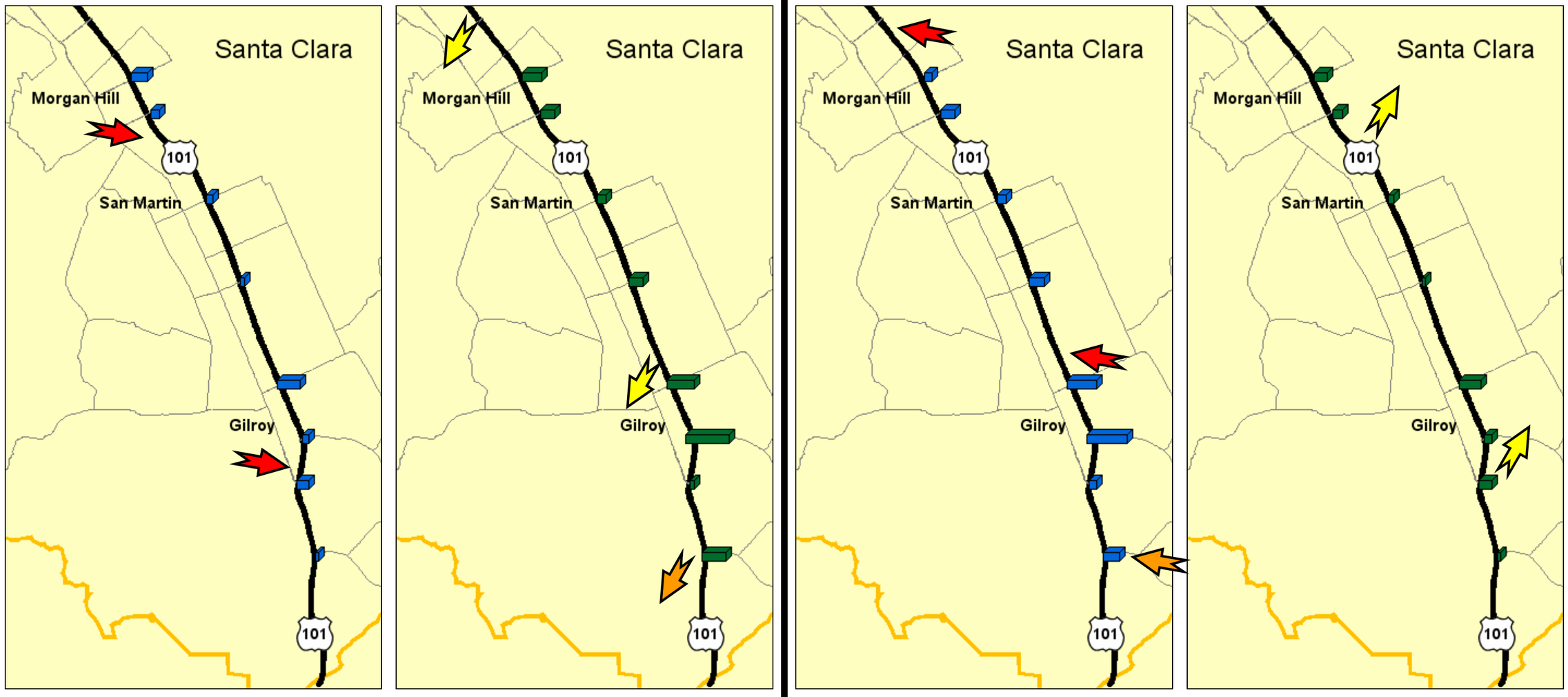


Ingress/Egress at Start or End of HOT Lane

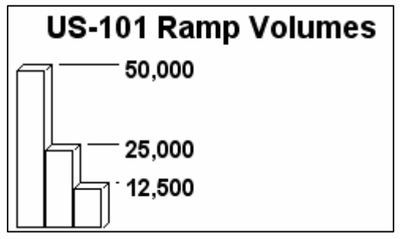
Intermediate Access Point

Intermediate Egress Point

Figure 2: On- and Off-Ramp Volumes for US-101 in San Mateo County



Southbound On-Ramps	Southbound Off-Ramps	Northbound On-Ramps	Northbound Off-Ramps
Average Spacing: 5.7 miles Maximum Spacing: 9 miles	Average Spacing: 7.7 miles Maximum Spacing: 10 miles	Average Spacing: 7.7 miles Maximum Spacing: 10 miles	Average Spacing: 5.7 miles Maximum Spacing: 9 miles

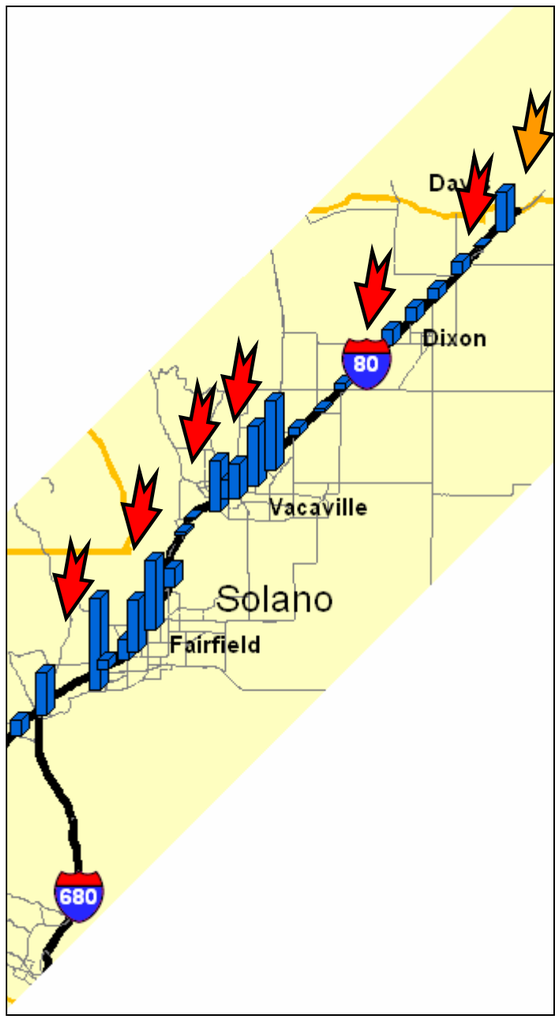


Ingress/Egress at Start or End of HOT Lane

Intermediate Access Point

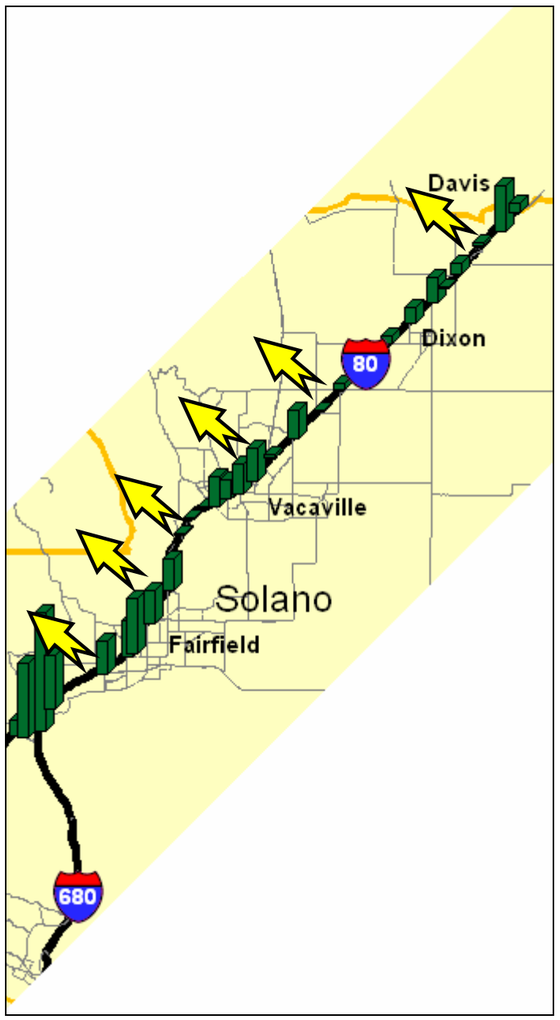
Intermediate Egress Point

Figure 3: On- and Off-Ramp Volumes for US-101 in Santa Clara County



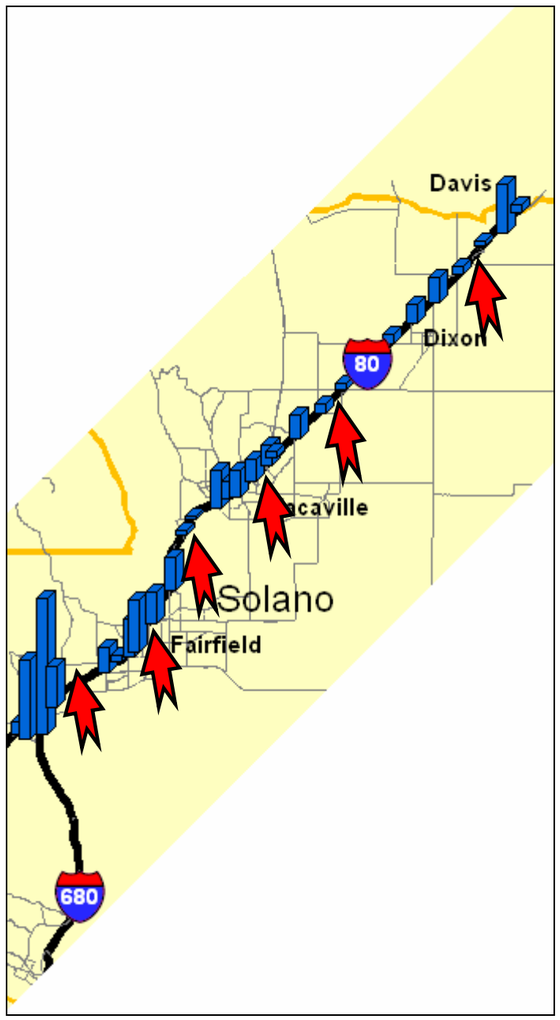
Westbound On-Ramps / Ingress Point

Average Spacing: 4.6 miles
Maximum Spacing: 8 miles



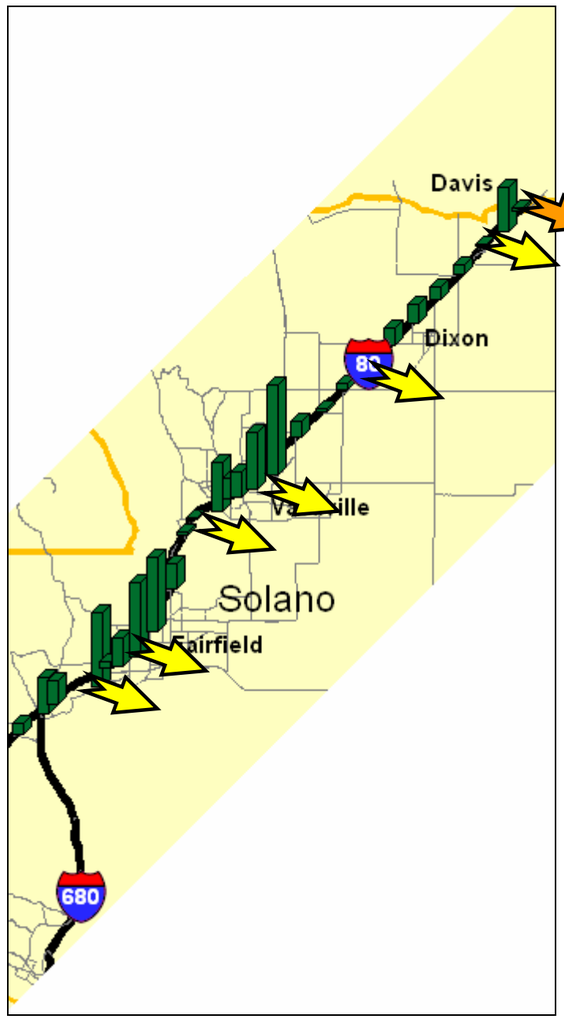
Westbound Off-Ramps / Egress Point

Average Spacing: 5.0 miles
Maximum Spacing: 8 miles



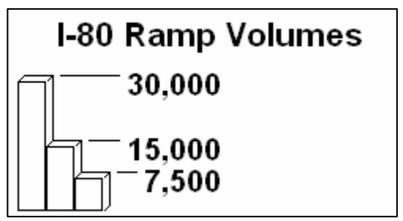
Eastbound On-Ramps / Ingress Point

Average Spacing: 5.0 miles
Maximum Spacing: 9 miles



Eastbound Off-Ramps / Egress Point

Average Spacing: 4.6 miles
Maximum Spacing: 8 miles

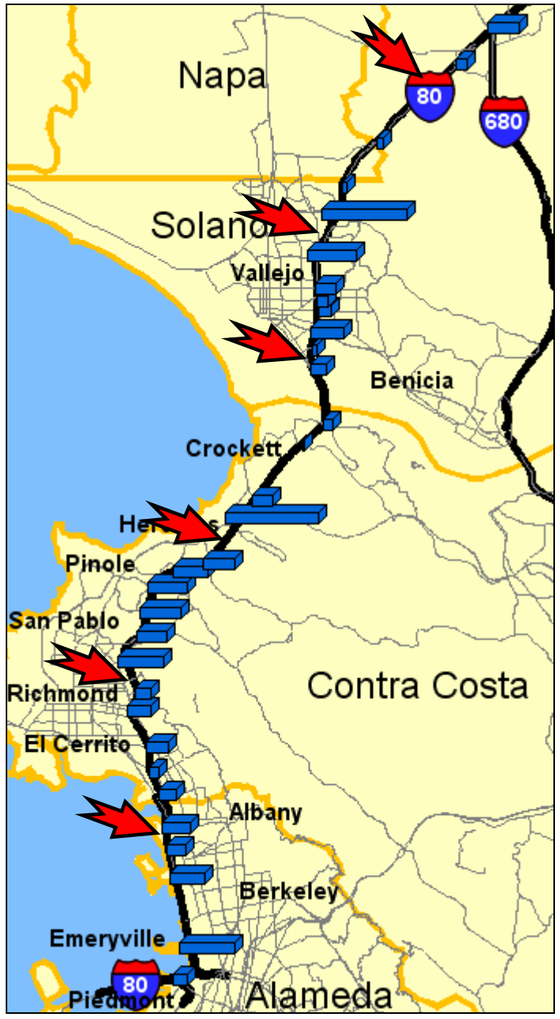


Ingress/Egress at Start or End of HOT Lane

Intermediate Access Point

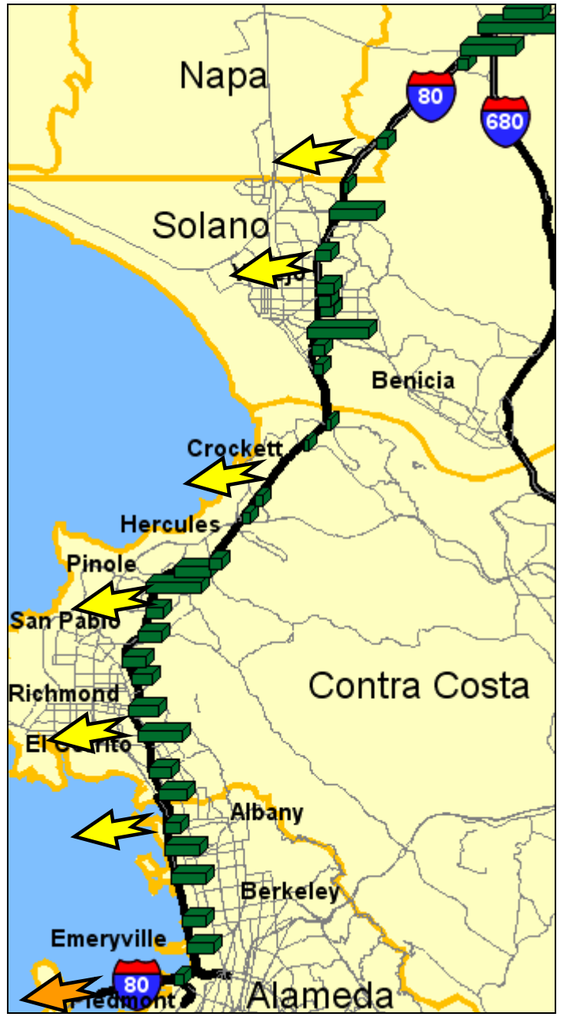
Intermediate Egress Point

Figure 4: On- and Off-Ramp Volumes for I-80 in Solano County



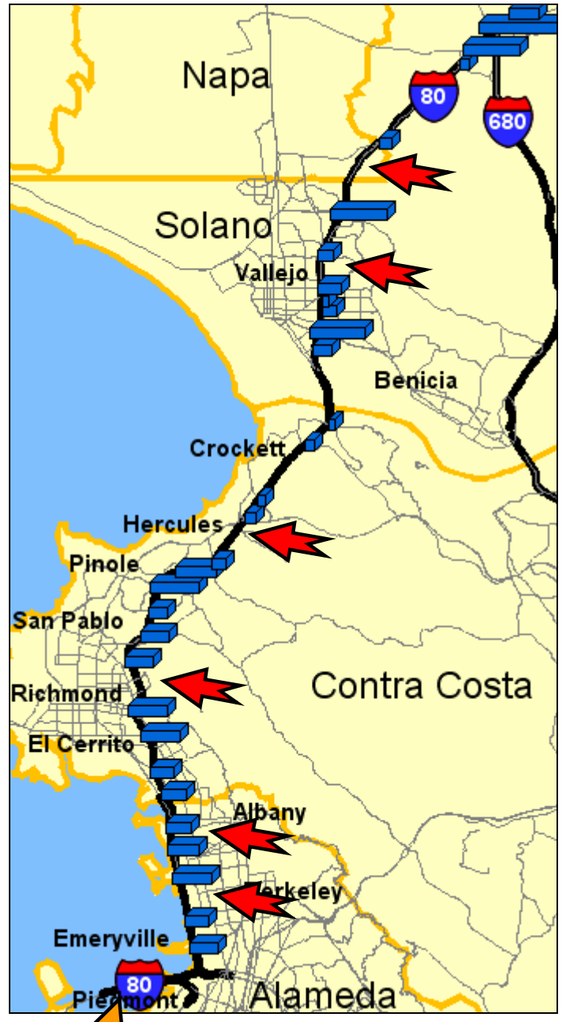
Westbound On-Ramps

Average Spacing: 5.2 miles
Maximum Spacing: 6 miles



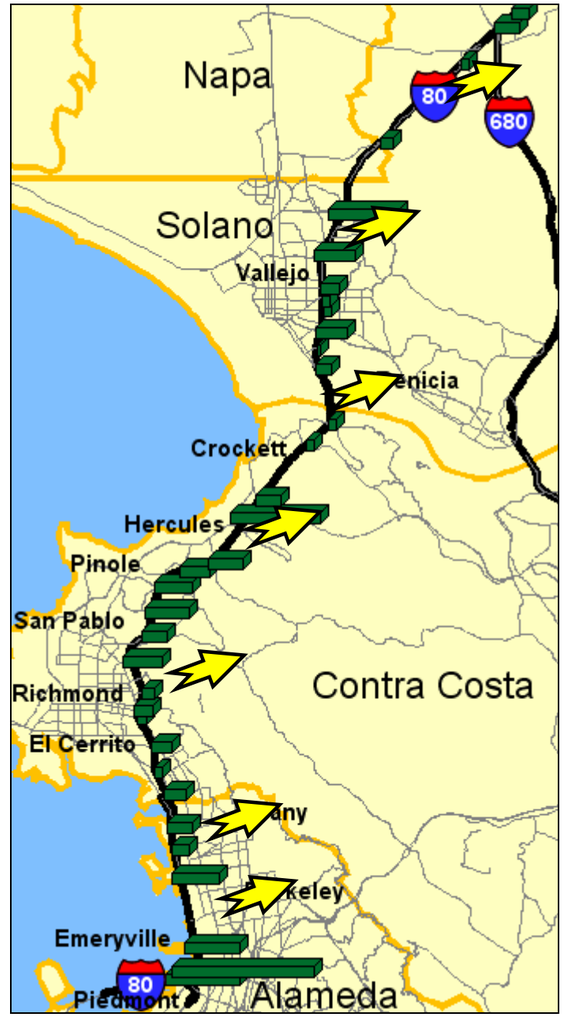
Westbound Off-Ramps

Average Spacing: 4.8 miles
Maximum Spacing: 7 miles



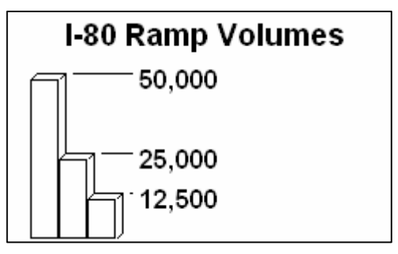
Eastbound On-Ramps

Average Spacing: 4.6 miles
Maximum Spacing: 9 miles



Eastbound Off-Ramps

Average Spacing: 4.5 miles
Maximum Spacing: 6 miles

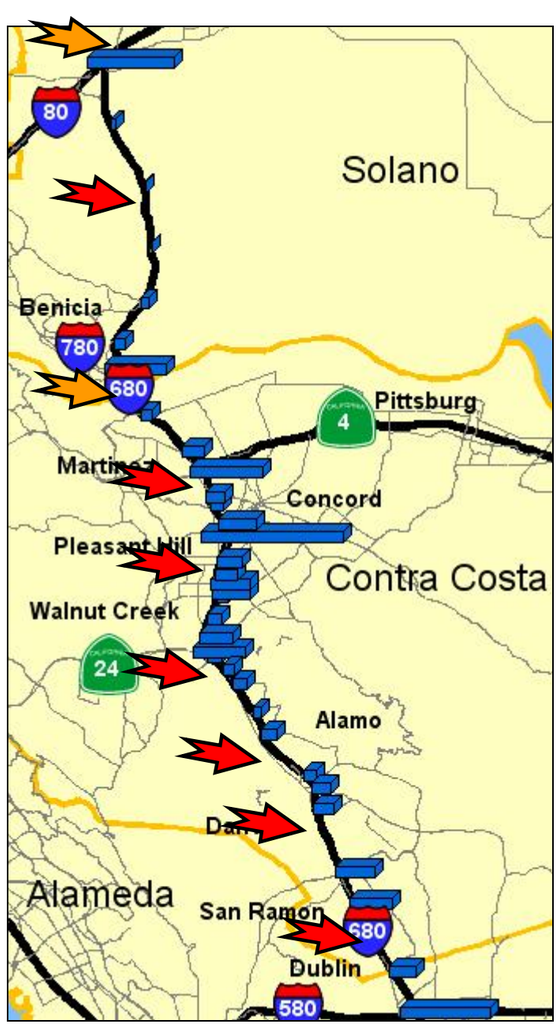


Ingress/Egress at Start or End of HOT Lane

Intermediate Access Point

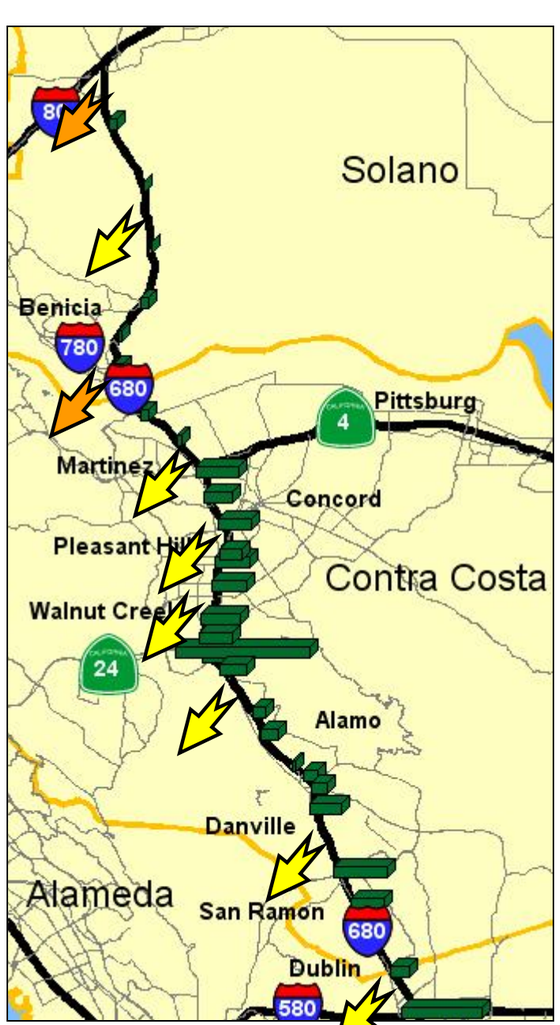
Intermediate Egress Point

Figure 5: On- and Off-Ramp Volumes for I-80 from Solano County to Alameda County



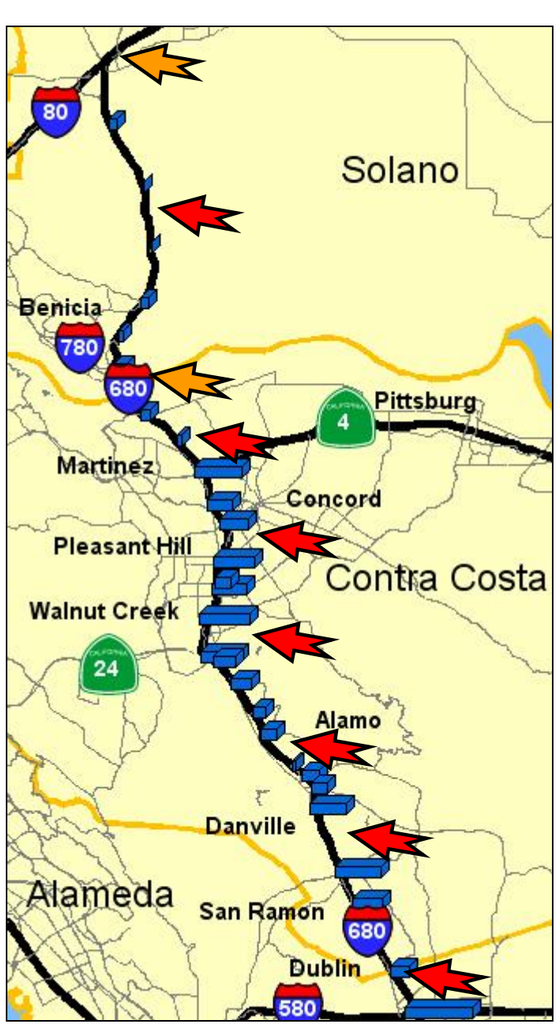
Southbound On-Ramps

Average Spacing: 4.5 miles
Maximum Spacing: 7 miles



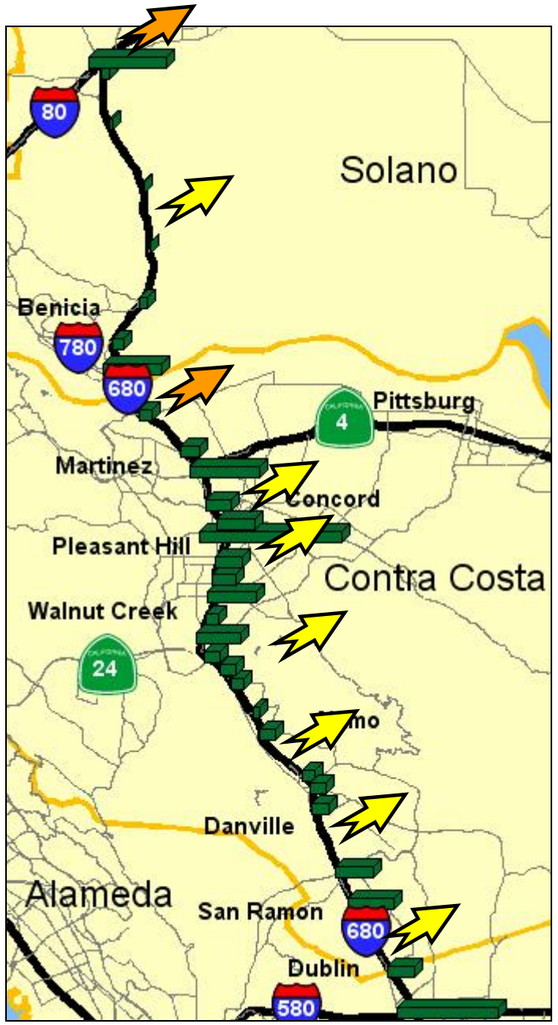
Southbound Off-Ramps

Average Spacing: 5.0 miles
Maximum Spacing: 7 miles



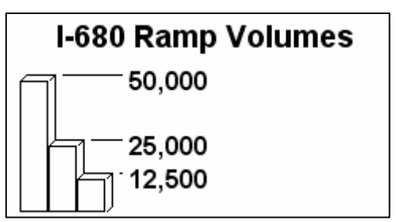
Northbound On-Ramps

Average Spacing: 5.0 miles
Maximum Spacing: 7 miles



Northbound Off-Ramps

Average Spacing: 4.5 miles
Maximum Spacing: 7 miles

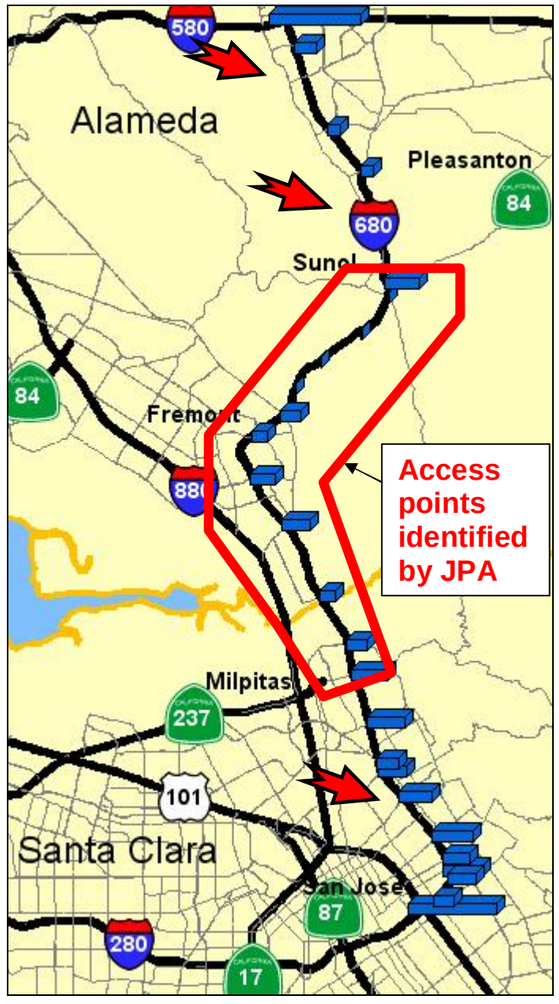


Ingress/Egress at Start or End of HOT Lane

Intermediate Access Point

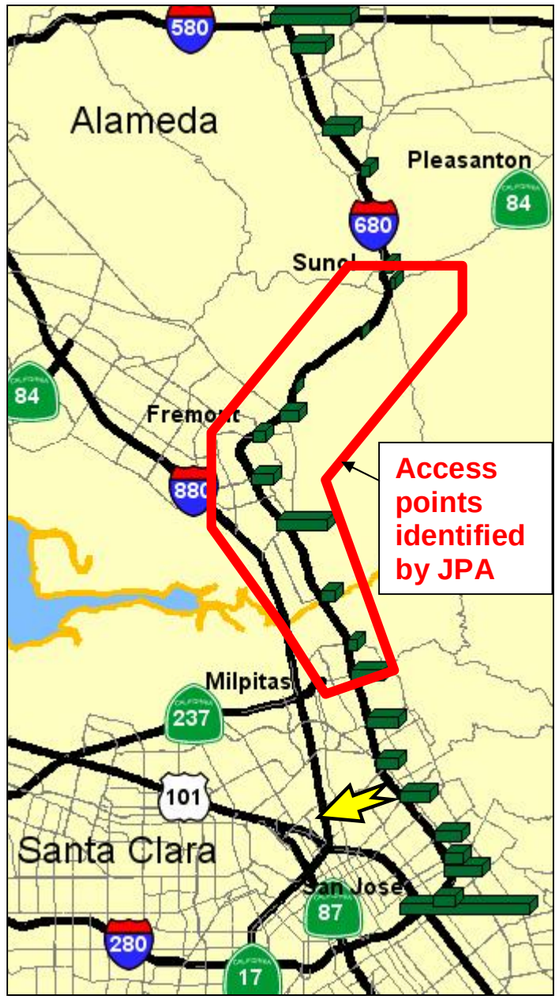
Intermediate Egress Point

Figure 6: On- and Off-Ramp Volumes for I-680 from Solano County to Alameda County



Southbound On-Ramps

Average Spacing: 3.2 miles
Maximum Spacing: 4 miles

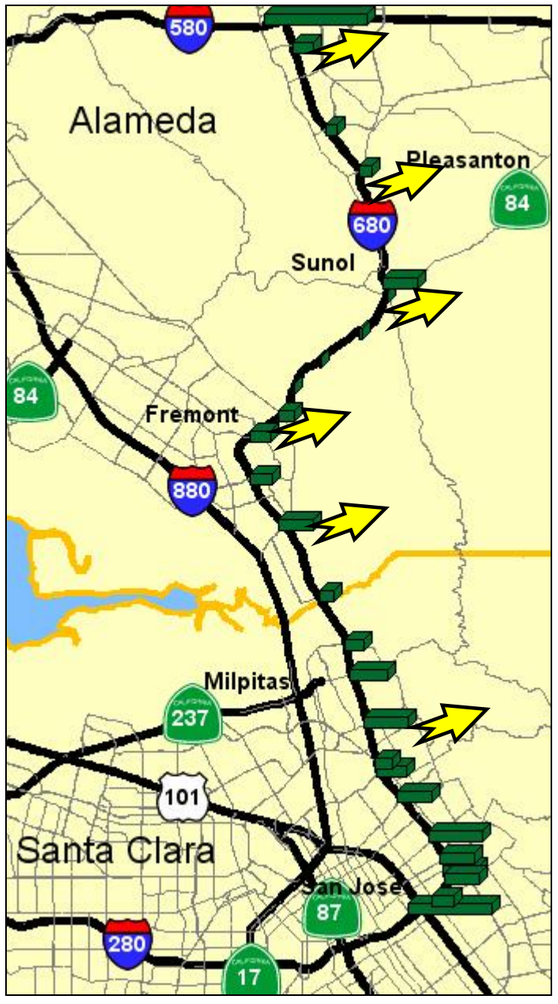


Southbound Off-Ramps

Average Spacing: 4.9 miles
Maximum Spacing: 6 miles

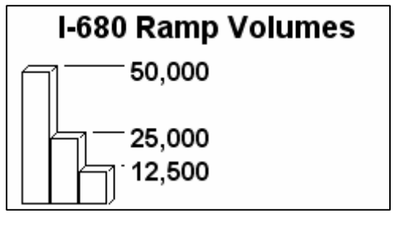
Northbound On-Ramps

Average Spacing: 4.9 miles
Maximum Spacing: 7 miles



Northbound Off-Ramps

Average Spacing: 4.6 miles
Maximum Spacing: 6 miles



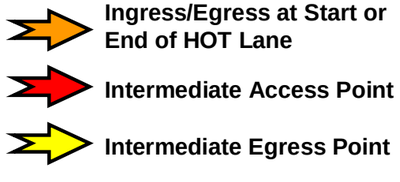
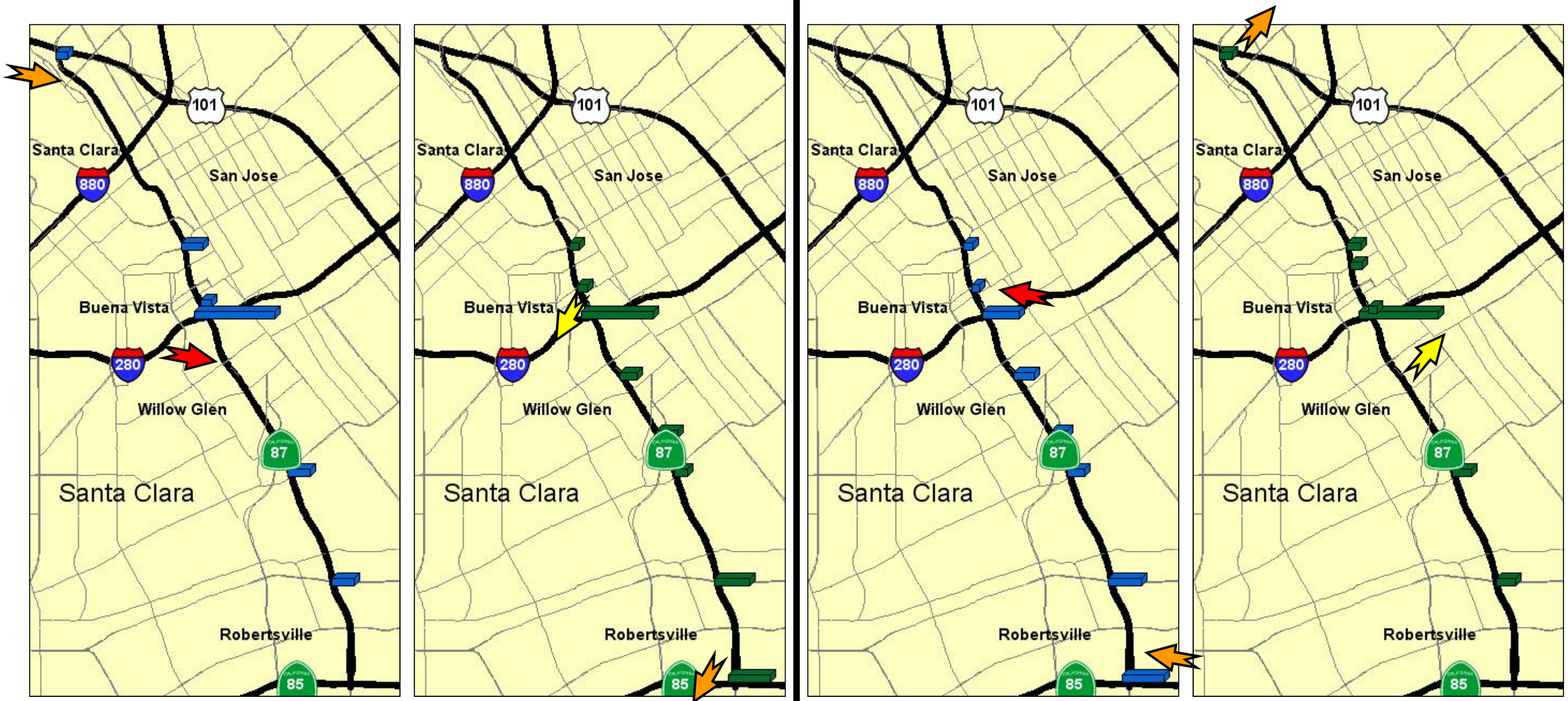
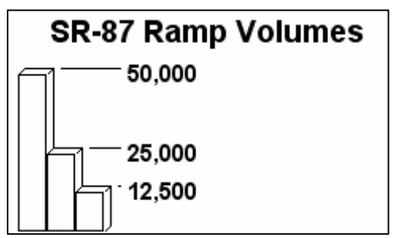


Figure 7: On- and Off-Ramp Volumes for I-680 in Alameda and Santa Clara Counties



Southbound On-Ramps	Southbound Off-Ramps	Northbound On-Ramps	Northbound Off-Ramps
Average Spacing: 3.8 Maximum Spacing: 4	Average Spacing: 3.8 Maximum Spacing: 5	Average Spacing: 4.0 Maximum Spacing: 5	Average Spacing: 4.0 Maximum Spacing: 5

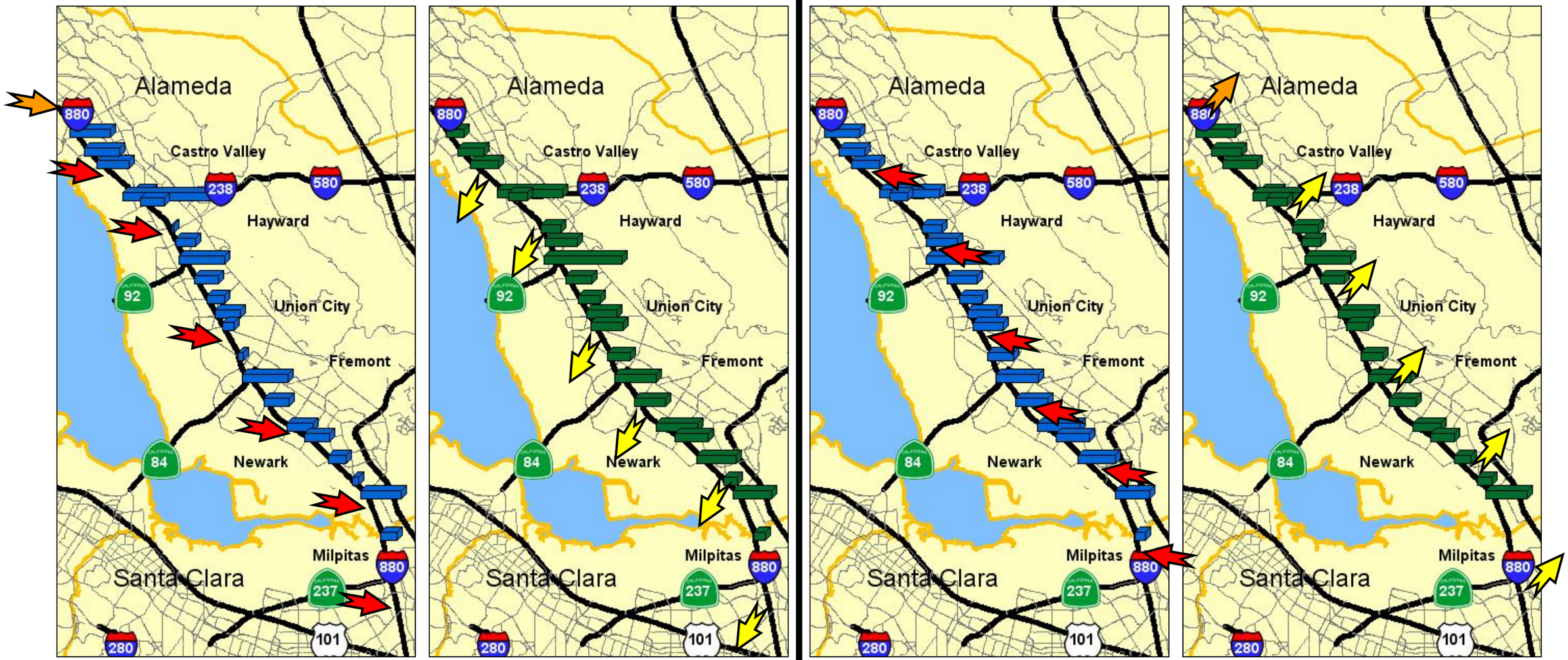


Start or End of HOT Lane

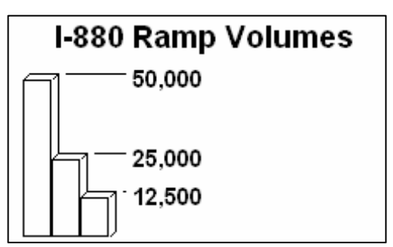
Intermediate Access Point

Intermediate Egress Point

Figure 8: On- and Off-Ramp Volumes for SR-87 in Santa Clara County



Southbound On-Ramps	Southbound On-Ramps	Northbound On-Ramps	Northbound Off-Ramps
Average Spacing: 4.7 miles Maximum Spacing: 6 miles	Average Spacing: 4.6 miles Maximum Spacing: 6 miles	Average Spacing: 4.2 miles Maximum Spacing: 5 miles	Average Spacing: 5.5 miles Maximum Spacing: 6 miles

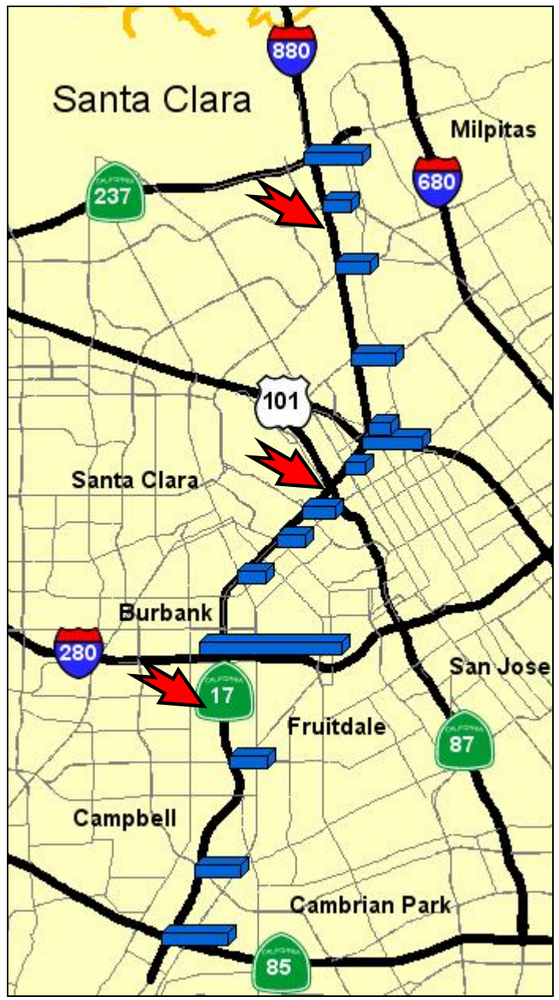


Start or End of HOT Lane

Intermediate Access Point

Intermediate Egress Point

Figure 9: On- and Off-Ramp Volumes for I-880 in Alameda and Santa Clara Counties

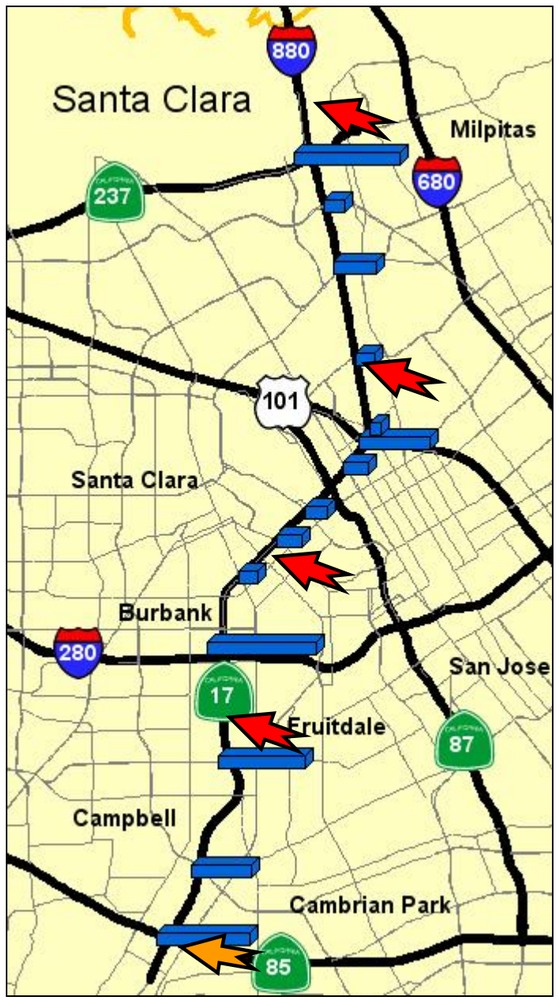


Southbound On-Ramps

Average Spacing: 3.9 miles
Maximum Spacing: 4 miles

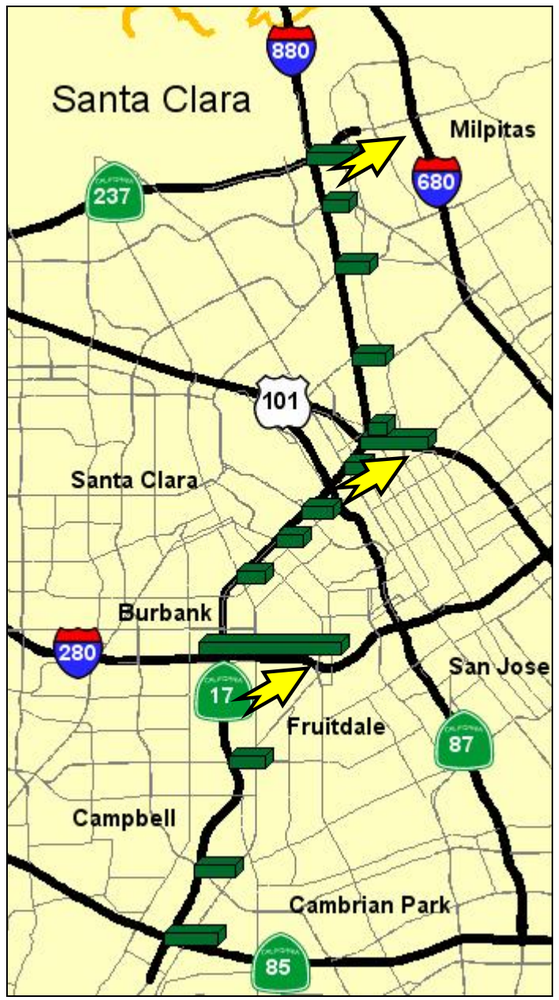
Southbound Off-Ramps

Average Spacing: 4.1 miles
Maximum Spacing: 6 miles



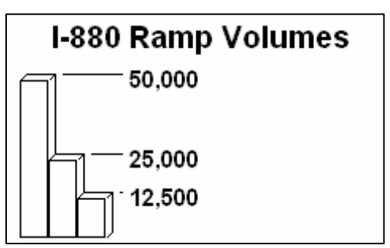
Northbound On-Ramps

Average Spacing: 3.6 miles
Maximum Spacing: 4 miles



Northbound Off-Ramps

Average Spacing: 4.1 miles
Maximum Spacing: 5 miles



Start or End of HOT Lane

Intermediate Access Point

Intermediate Egress Point

Figure 10: On- and Off-Ramp Volumes for I-880/SR-17 in Santa Clara County

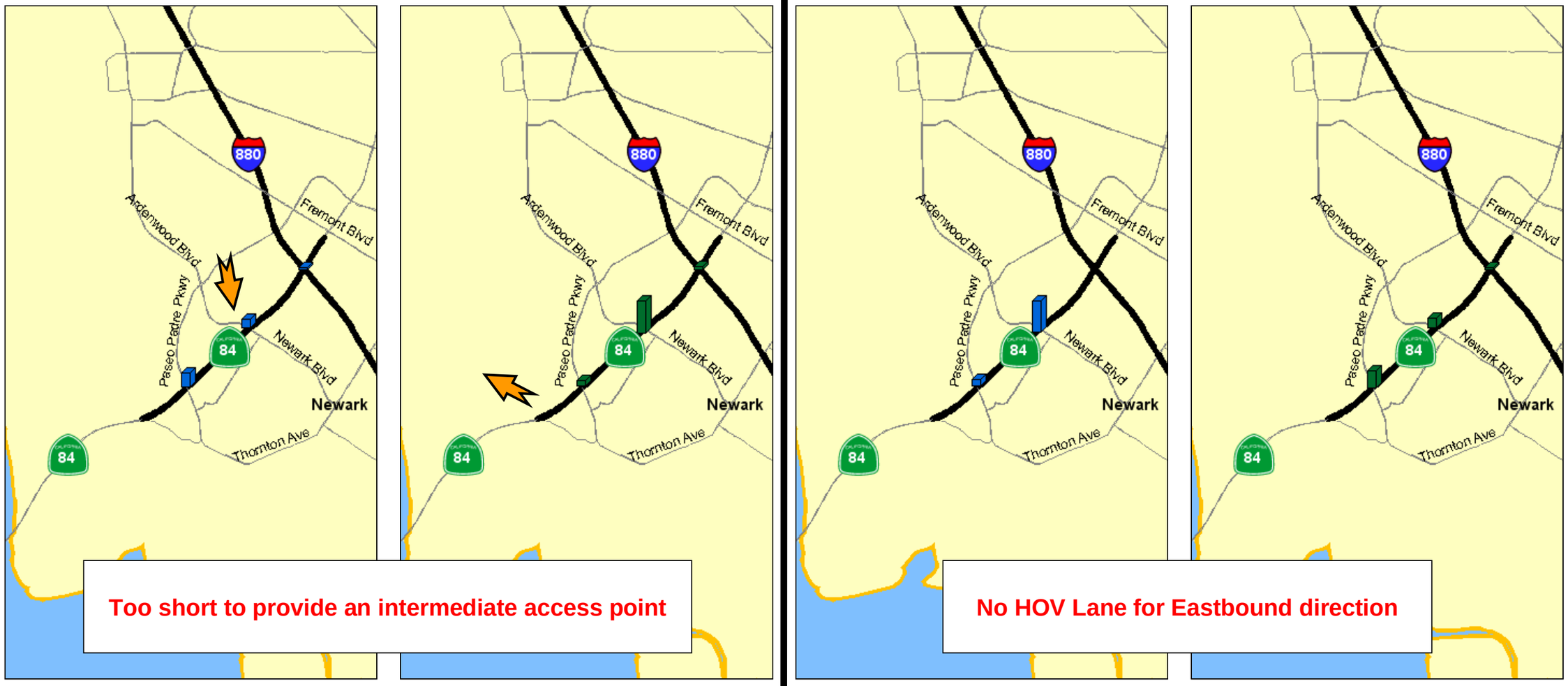
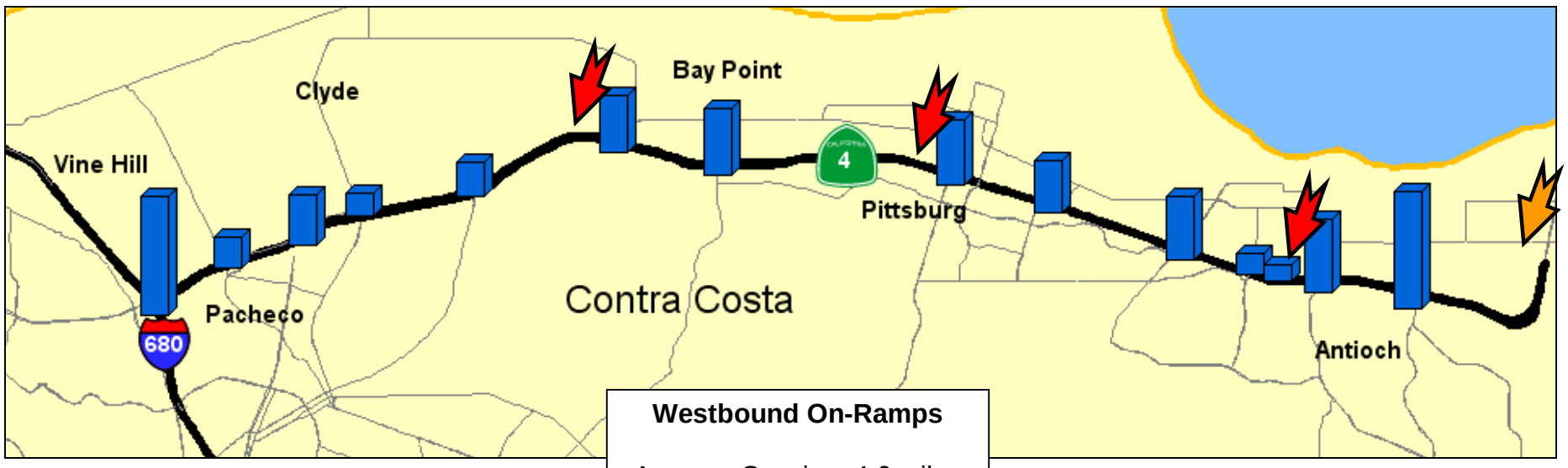
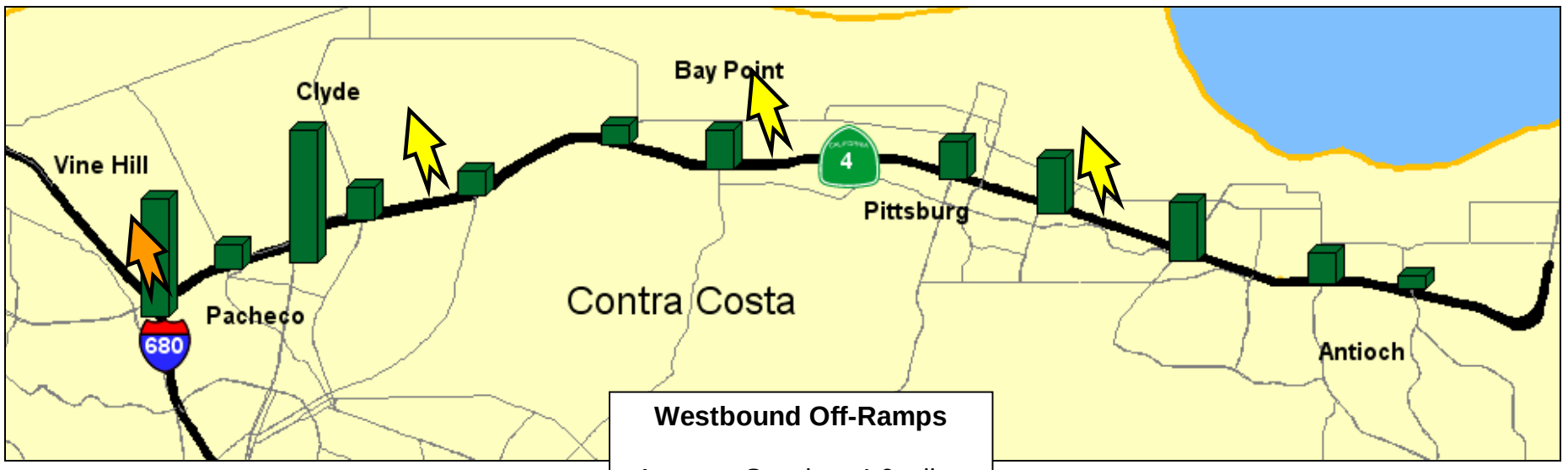
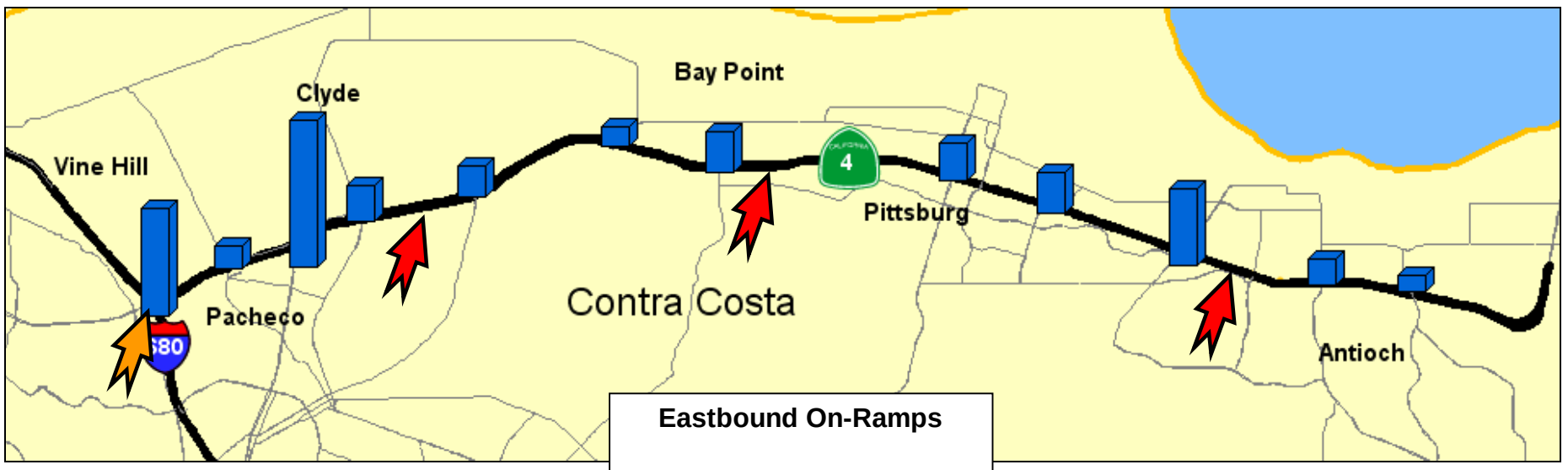


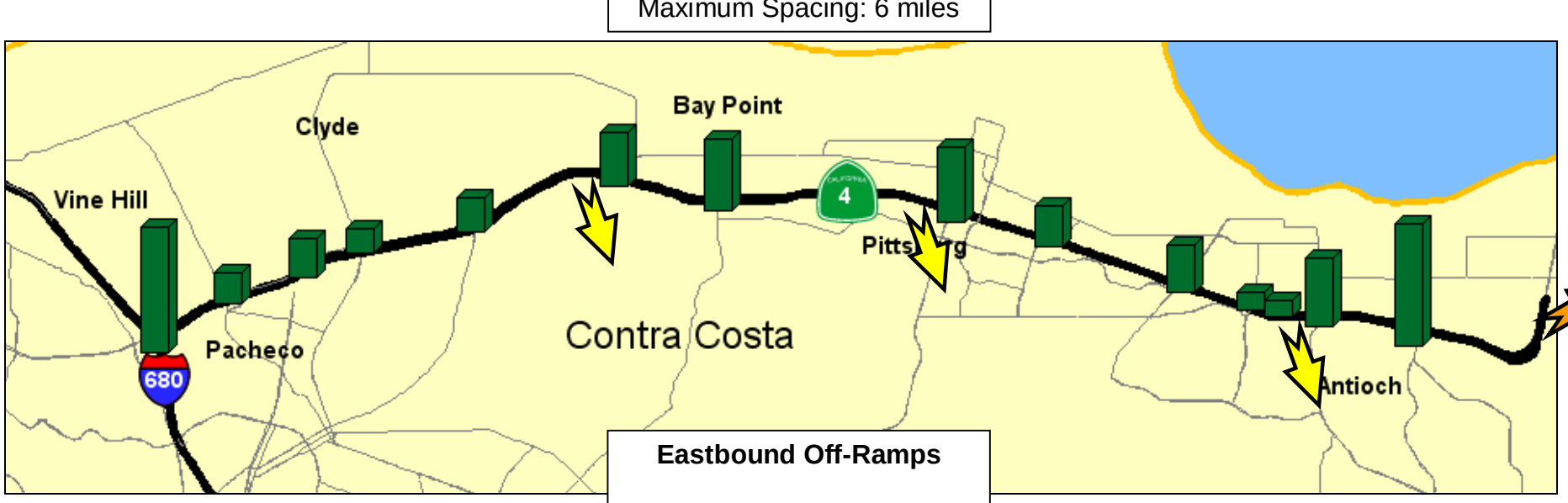
Figure 11: On- and Off-Ramp Volumes for SR-84 in Alameda County

Figure 12: On- and Off-Ramp Volumes for SR-4 in Contra Costa County









Ingress/Egress at Start or End of HOT Lane

Intermediate Access Point

Intermediate Egress Point

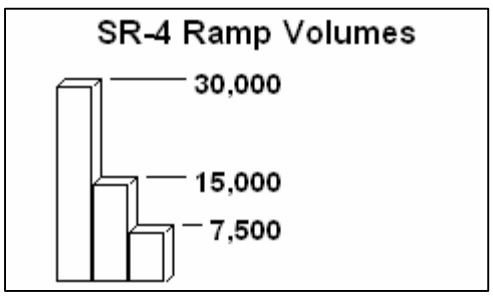
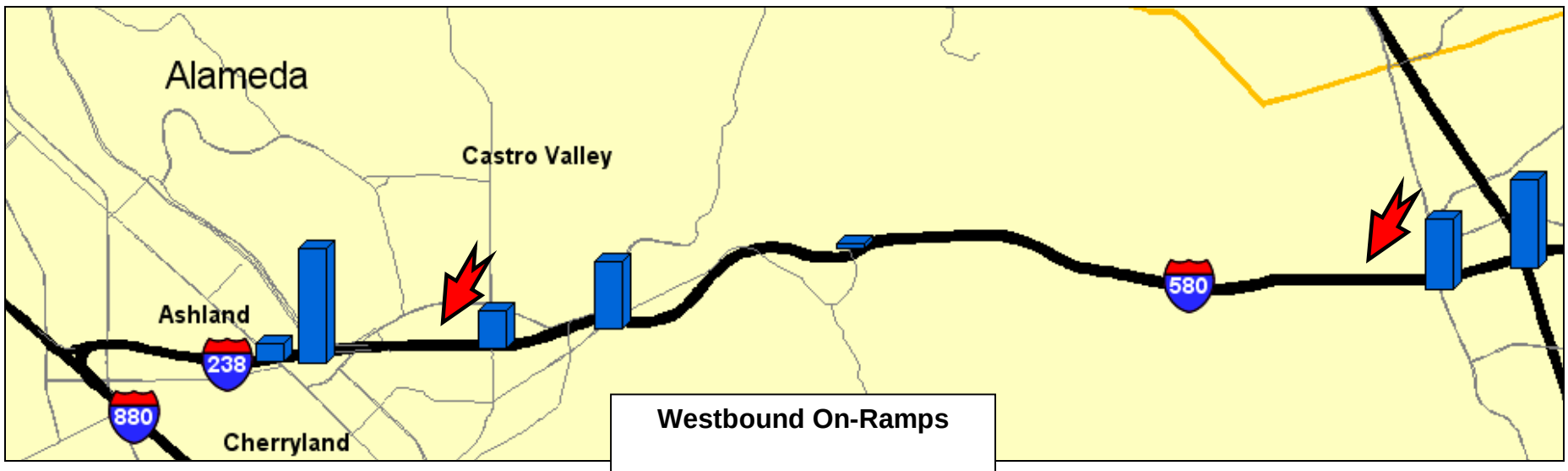
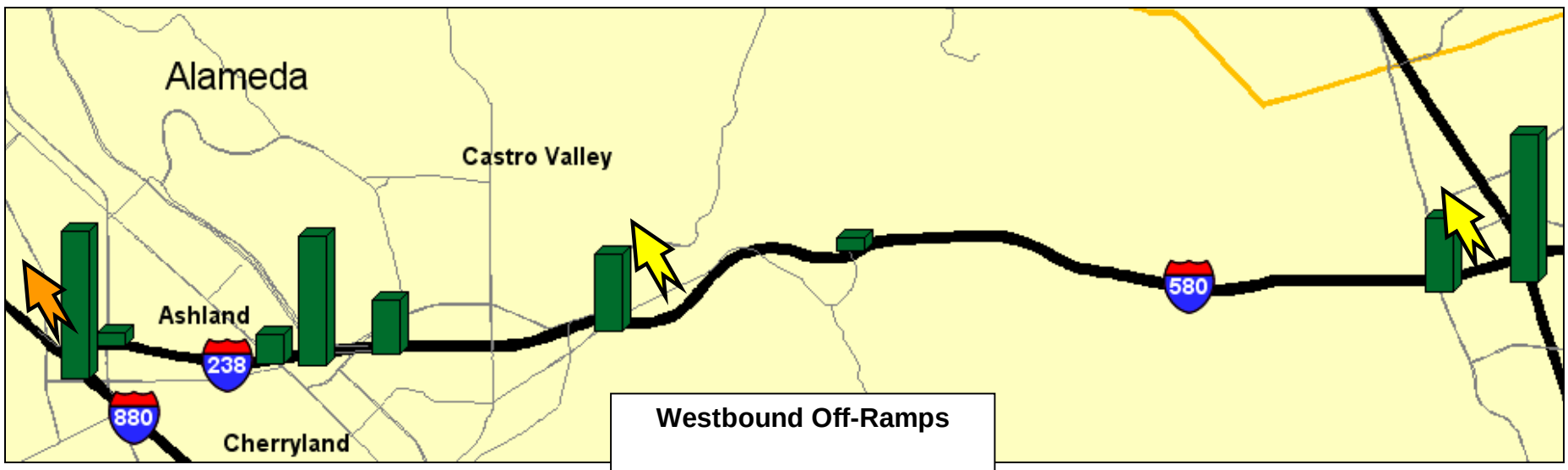


Figure 13: On- and Off-Ramp Volumes for I-580 in Alameda County



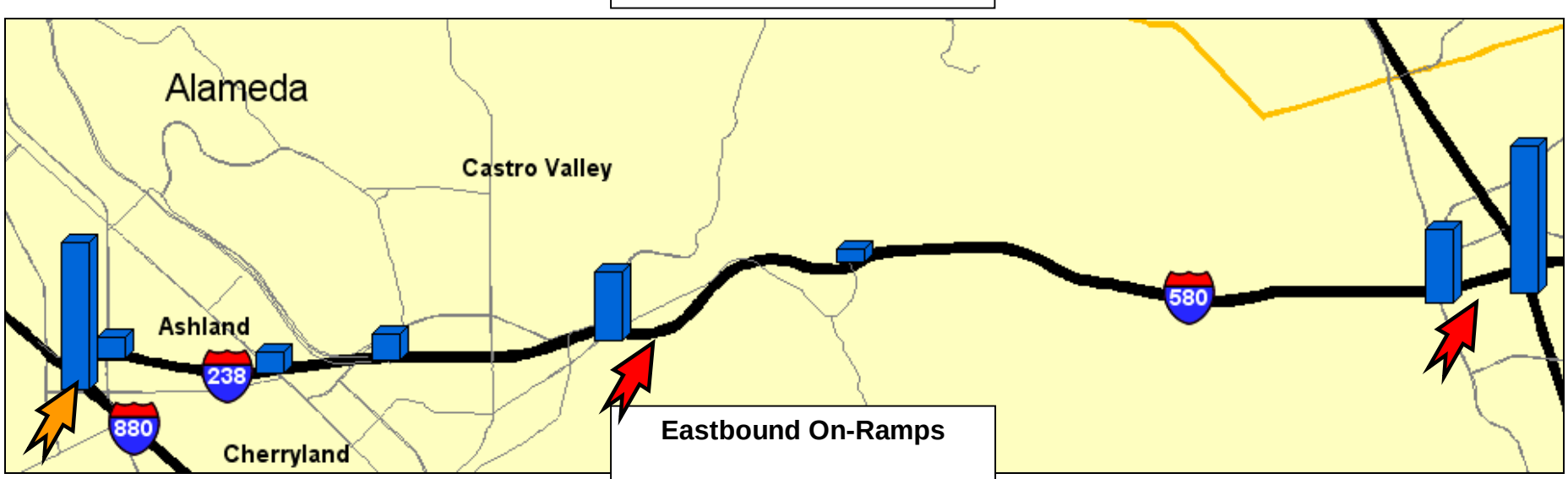
Westbound On-Ramps

Average Spacing: 3.7 miles
Maximum Spacing: 8 miles



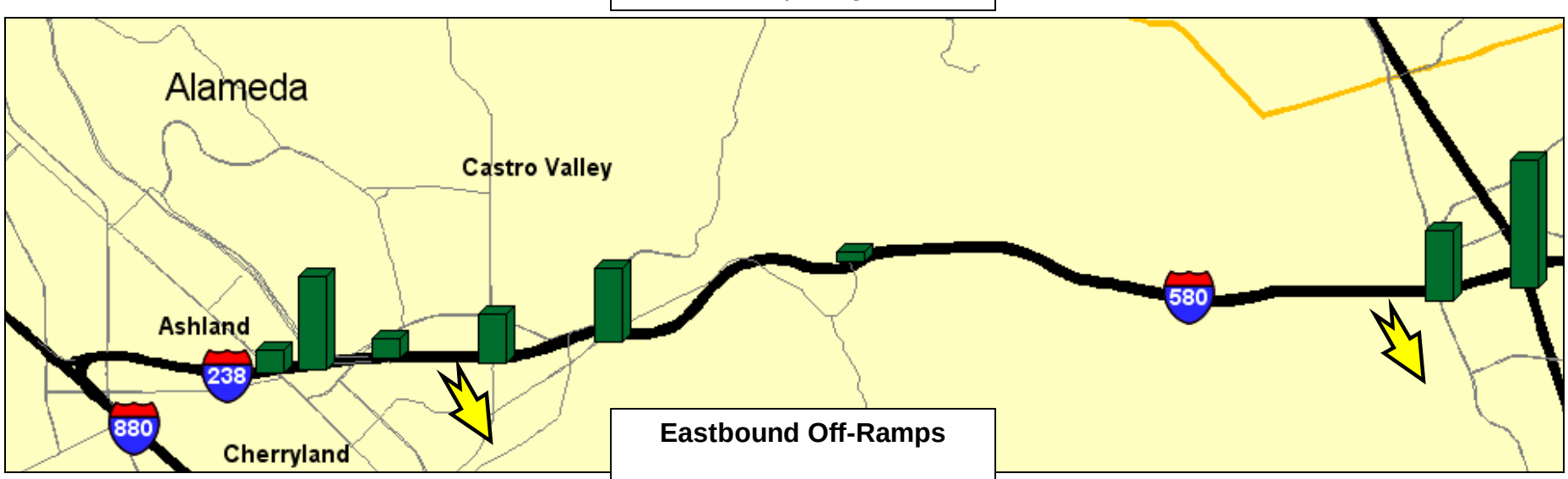
Westbound Off-Ramps

Average Spacing: 3.7 miles
Maximum Spacing: 4 miles



Eastbound On-Ramps

Average Spacing: 3.8 miles
Maximum Spacing: 7 miles



Eastbound Off-Ramps

Average Spacing: 3.8 miles
Maximum Spacing: 8 miles

Ingress/Egress at Start or End of HOT Lane

Intermediate Access Point

Intermediate Egress Point

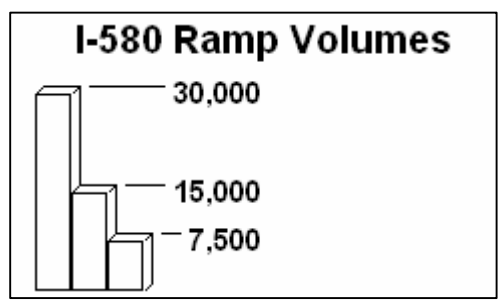


Figure 14: On- and Off-Ramp Volumes for SR-237 in Santa Clara County

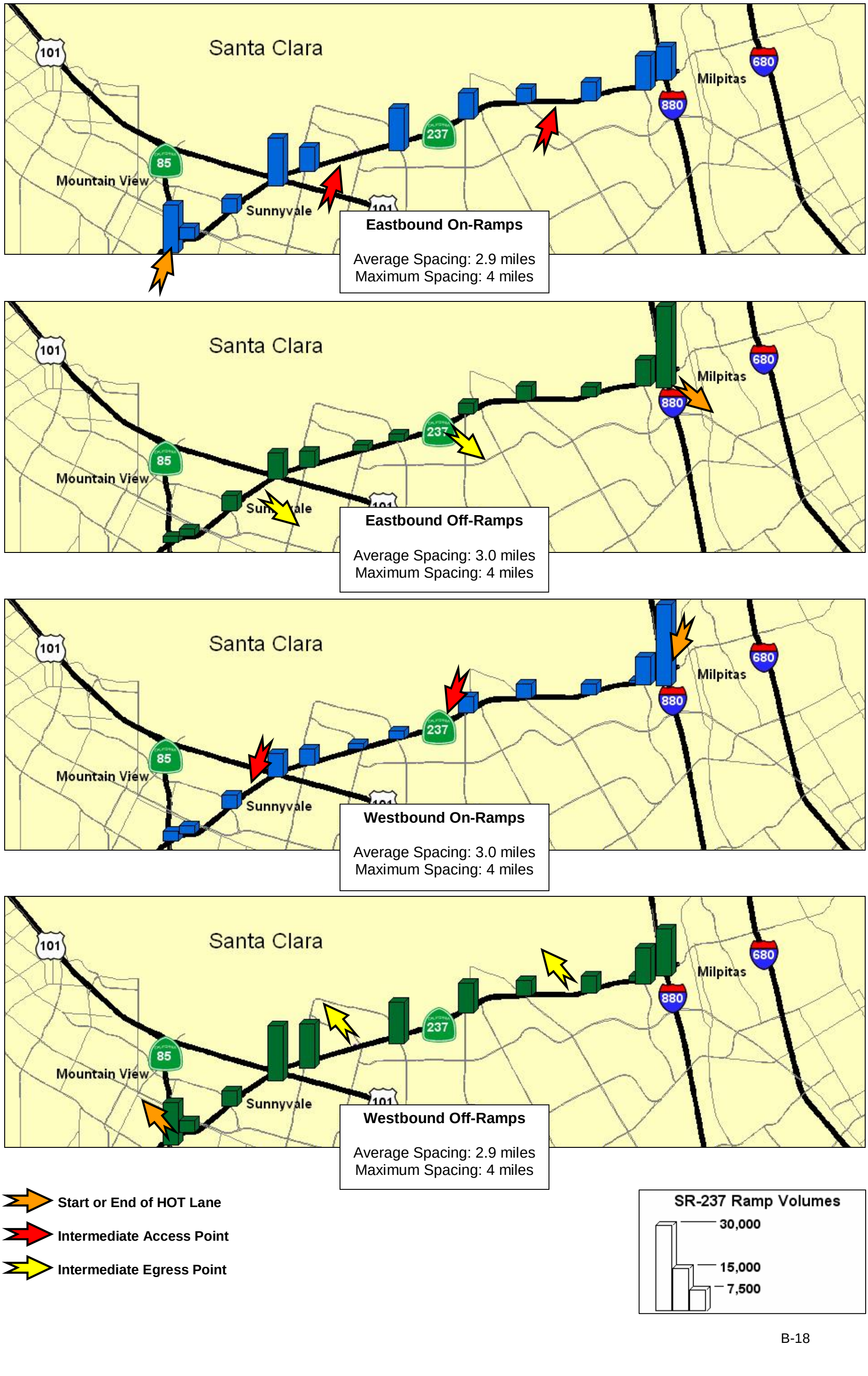
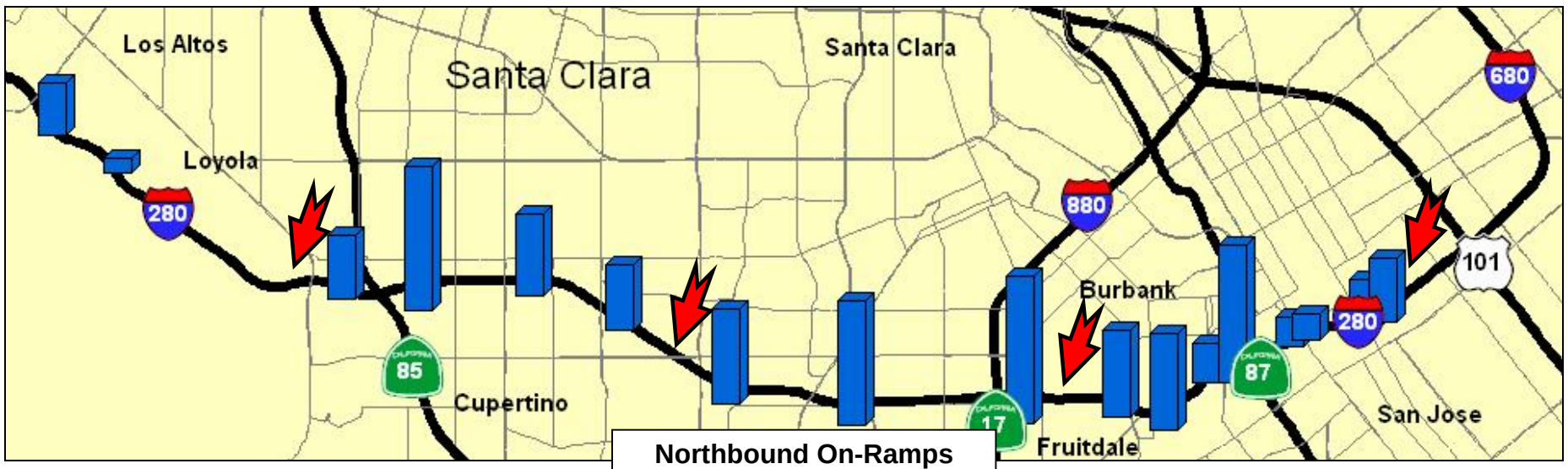
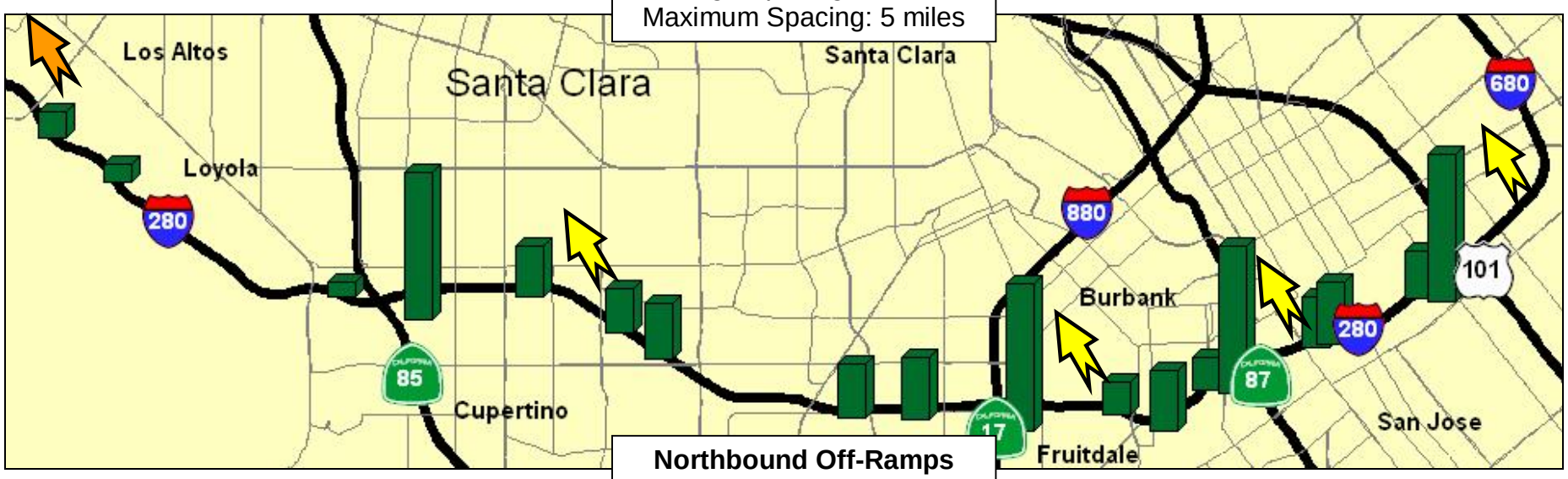
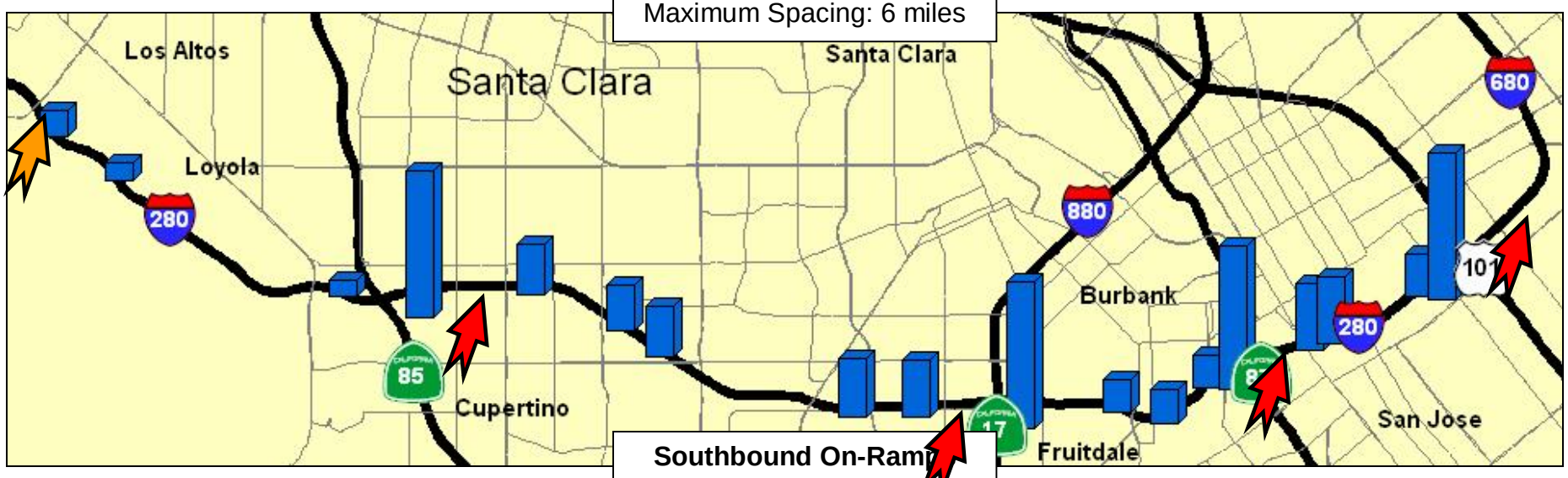
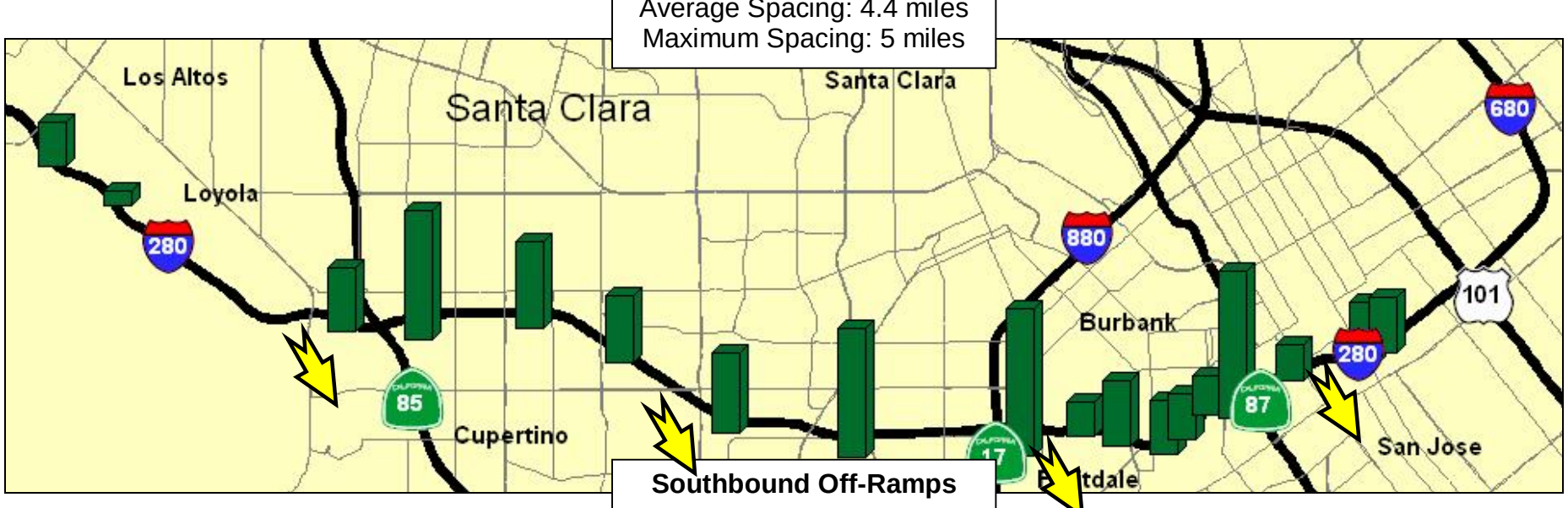


Figure 15: On- and Off-Ramp Volumes for I-280 in Santa Clara County





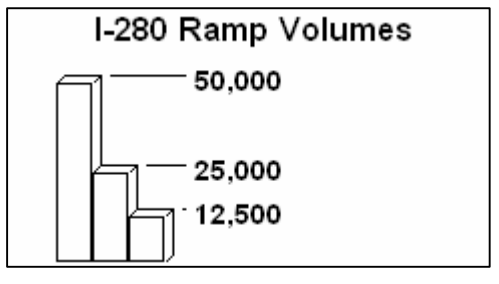




Start or End of HOT Lane

Intermediate Access Point

Intermediate Egress Point



Comments from Participating Agencies

This report was reviewed in draft form by members of the project's Technical Advisory Committee. Their comments are shown in the table below.

Summary of Comments on Preliminary Access Plan, HOT Phase 3 Study
October 14, 2008

Comments are presented in two groups

1) General comments on approach to design, locating access/egress, and assessing demand
2) Specific comments on particular access/egress locations in each corridor. (routes are listed in ascending order by route no.)

Comment	Response/Note
Design Approach	
Concern about safety impacts of rapid delivery design features. Reduced lane widths are concern in hilly terrain. (SCTA)	Topic will be discussed with CHP and Caltrans in Ph 3 study
Will transition (merge) lanes of 1,500 ft create volume related congestion at transition zones?	Separating ingress from egress movements and incorporating space for acceleration or deceleration within the site should reduce operational issues related to these points. Length of transition zones at specific locations will be based on an operations analysis during the subsequent Project Study Report phase for each corridor project.
In looking at converting HOV Lanes to HOT Lanes, there are existing constraints (primarily bridge structures) that restrict the horizontal space available for the 2-4 foot left shoulder, 2 to 4 foot buffer and 10 foot right shoulder. Therefore each constrained location will have to consider trade-offs. Traditionally trade-offs are based on cost/benefit. In the case of HOT Lanes, the benefit is not a direct user benefit, it is instead a financing benefit that will accelerate another HOV Lane construction. Therefore, I would like to the report to provide a structure to this discussion. Whereas it would provide consideration of this benefit as part of a cost benefit analysis. The study should provide this is a benefit (complete the HOV Lanes Network) as a conclusion. (STA)	Preliminary assessments for trade-offs at this stage will not replace the need for a full cost-benefit assessment associated with a Project Study Report, which can examine the impact of financing for the project in context to the system. There are direct user benefits because additional users (toll-paying SOVs) will be making use of the lane. Congestion will also be eased to some extent in the general purpose lanes. So there will be the traditional highway benefit of travel time savings. An earlier phase of the analysis quantified benefits of completing HOV lanes faster in terms of increased mobility. During this phase of the study we are devoting most of our study resources to getting better clarity on capital cost issues using some very broadly defined assumptions that are based on HOT lane projects being implemented in the Bay Area by Santa Clara and Alameda Counties..
I understand this study is the start, Caltrans must develop or adopt (and quickly) design standards for signing/striping/electrical/hardwire/access and egress geometrics, etc. so each project does not have to get these approved one by one (including specifications). The study should recommend this specifically. As such, it is vital Caltrans concur with the findings or conclusions of this study. (STA)	We are working to add some “early action” studies to resolve design issues of immediate relevance to projects currently in development.

Comment	Response/Note
Ingress/Egress Approach - General	
Limited access may not serve intra-county trips well in Marin and Sonoma counties where US 101 is the main arterial for local trips. May trips less than 10 miles. (TAM, SCTA) Consider allowing continuous access or increasing ingress/egress opportunities to increase political acceptance. (TAM) Fewer access points better from enforcement and safety perspectives. (CHP HQ)	As these two comments, one for more access and the other for less access demonstrate, there are trade-offs in determining how many access points to provide. Our original target, based on nationwide HOT lane experience, was an average spacing of 5 miles and a maximum spacing of ten miles. However, since many of the comments on individual corridors call for additional points, the average is likely to be less than this (assuming that additional points can be made to fit within the physical constraints of the sites). We will also look into the possibility of providing more egress points than ingress points. Egress points do not require tolling equipment or CHP enforcement and appear to be more politically important (in terms of serving retail centers, for example).
Are there opportunities for businesses or local gov'ts to sponsor direct access ramps? (CHP HQ)	Potentially, but this is likely to be the exception due to extraordinary high costs of such ramps.
Enforcement and safety should be considered when specifically sighting access/egress: collision rates, lane and shoulder width, curves, availability of potential CHP observation spots and enforcement zones (CHP HQ)	Agree these are important considerations and would consult CHP area offices as is being done for current HOT lane projects.
Longer toll zones will tend to create more incentive to cheat (CHP HQ)	Long sections may require the use on toll readers spaced at more frequent intervals to discourage buffer crossing. More generally, the incentive to cheat is in proportion to the success of the facility in delivering shorter travel times than the general purpose lanes. So the more successful the facility, the greater the need for enforcement.
Given constraints on I-680 in Contra Costa, continuous access may be only feasible approach for near-term implementation. Need to review implications for safety, traffic flow, toll collection and enforcement (CCTA)	A number of corridors including I-680 may be difficult to fit recommended ingress and egress into. Where such situations occur, dialog will be held with Caltrans, CHP and the affected CMA to determine an access assumption moving forward. A specific recommendation may not be possible in this early stage of a systemwide study and may need to be addressed as part of the PSR process.

Comment	Response/Note
Maps do not clearly indicate which interchanges would be served by access/egress locations or what time horizon is being evaluated (ACCMA)	Have not yet specifically located access/egress points, which will be heavily influenced by design constraints, which will happen on selected corridors getting detailed study. Maps were intended to show general locations based on overall (current) demand patterns. Maps do not assume any construction projects are implemented and we seek assistance from the CMAs to identify projects that might affect general locations (at this point in the study) and more specific sighting (in the next task).
Maps do not clearly indicate where the HOT lanes start and stop. (ACCMA) Need to review locations that are between mapped contiguous corridors (e.g., where I-80 Solano meets I-80 CC/ALA; where 680 SCL meets 280 SCL) to make sure we are not leaving gaps (MTC)	The maps were developed on a corridor-by-corridor basis, which has the inherent disadvantage of not showing how the corridors connect at this preliminary stage. Thanks, we will work on correcting this deficiency in later figures.
Do maps show implementation through converting existing HOV only or through constructing new lanes? (ACCMA)	Regional network assume both conversion of existing HOV lanes and construction of new lanes (e.g., I-680 NB in Alameda County)
Maps should show other major routes (even if not HOT lanes) such as I-580 through Oakland (ACCMA)	The intended purpose of the ramp volume maps was to identify locations with high demand. Other major roads appear in the figures in the form of large entry and exit movements. In the future, for figures that are zoomed in to a finer grain of detail we will show major connecting roads through thick lines and labeling.
Demand Assumptions	
May not be reasonable to assume HOT demand mirrors HOV demand. (SCTA) Are ramp volumes accurate enough to predict HOT demand? (SCTA, CHP HQ)	The Preliminary Access Plan assumes demand for access/egress to HOT lane is proportional to total on- and off-ramp demand; not to HOV demand. But in general HOV demand does mirror local demand. Agree that limited access HOT lanes may have different demand patterns than existing continuous access HOV lanes, and we did not use this as the basis for locating access points. Agree that you ideally want to use O-D info and demand forecasts that recognize limited access to predict demand; the existing ramp volumes are intended as a starting point to help refine cost estimates. Info from county CMAs has been solicited to better understand travel patterns that may not be evident in ramp volumes. Future analysis will include refined demand and operations analysis.

Comment	Response/Note
Proportion of motorists willing to pay $5 to travel one mile vs $5 to travel eight miles may not be the same. (SCTA, CHP HQ)	Our working assumption is that tolls will be related to the distance traveled as well as to congestion levels. This could be done, for example, by computing the toll separately for each section traveled. That way a 1-mile trip would not be paying the same toll as an 8-mile trip.

Preliminary Access Locations

General

- Need to review locations that are between mapped contiguous corridors (e.g., where I-80 Solano meets I-80 CC/ALA; where 680 SCL meets 280 SCL) to make sure we are not leaving gaps (MTC)

SR 4 (CCTA)

- Major activity centers at:
  - East of Willow Pass Rd, especially if Naval Station redevelopment includes employment. Willow Pass Rd will be main access
  - Port Chicago Hwy (North Concord BART and secondary access to Naval Station redevelopment)
  - East of Bailey Rd (West Pittsburg/Bay Point BART) – WB egress and EB ingress
  - West of Railroad (downtown Pittsburg and housing) – WB ingress and EB egress
  - West of L Street/Contra Loma (Central Antioch) – WB ingress and EB egress; new 4-way interchange to be constructed
  - East of Somersville (shopping, JC, west Antioch) – WB egress and EB ingress
  - West of Lone Tree/A Street (Antioch, Route 4 Bypass, Byron, Discovery Bay, Antioch Bridge) – WB ingress and EB egress
- See list of projects

SOL-80

- Shoppers may have different price elasticity than commuters. Major shopping malls along Solano-80 in Vacaville are located off Nut Tree Rd, Allison Rd and Travis Blvd exits (CHP HQ)
- concur that the locations of the intermediate access/egress should be based on ramp volumes. However, an additional consideration is the location of regional intermodal facilities. Solano County is a strong proponent of the regional bus system and do not want the HOT Lanes to inhibit this use. (STA)
- We are about to conclude a PSR on I-80 in Vallejo and have found a number of restrictions with non-standard existing conditions through the 5-mile stretch between SR 367 and Carquinez Bridge. Therefore, access should be located to allow traffic to and from 37 and to and from just before the Carquinez Bridge. Within this stretch, the city has built-out around the Interstate to the extent that even building a HOV Lanes requires design exceptions for left/right shlds and lanes. (STA)

CC-80 (CCTA)

- Interchange spacing is close; will make it difficult to cite HOT access vis a vis weaving.
- See specific constraints and possible opportunities
- Other notes
  - Current HOV volumes; minimum capacity to sell; conversion to 4+ could discourage carpools
  - Heavy bus service in this corridor; how will HOT lane impact?
  - ICM project should be implemented before HOT lanes considered

ALA-80 (ACCMA)

- EB: serve Ashby Ave, which provides access to Emeryville commercial district (due to constraints existing at Powell)
- EB: agree with access to/from University and ingress from Ashby and University
- EB: agree with egress proposed to Gilman, Buchanan and I-580.
- WB: agree with access relative to I-580
- WB: provide access from HOT lane to Gilman, University and Powell
- Other notes:
  - May not be possible to provide single lane HOT due to lack of capacity
  - Should explore 2 lanes, reversible lane and elevated lane
  - Consider extension of HOT system through the Bay Bridge toll plaza

ALA-80 (MTC – subordinate to county/Ct comments)

- Access from Emeryville possible? It would be desirable

SCL-87 (Caltrans D4)

- Northbound SR 87: The ingress point would need to be downstream of the access from the downtown connector.

SCL 87 (VTA Comments)

I think SR 87 Express Lanes should be a chute from US 101 to SR 85 due to R/W constraints. M-4 weave option can potentially accommodate the following entry/exits.

SB On-Ramps

- add entry for San Jose airport
- delete entry for I-280, configuration on ground does not allow traffic to access SR 87 until past Alma Ave., light rail runs in the median, tight corridor, go for a Chute!

SB Off-Ramps

- exit to I-280 should be placed closed to St.James/Julian Mc Kee, we probably could live without this exit if traffic operations fail?
- potential exit to Capitol Expressway?

NB On-Ramps

- add Capitol expressway
- doubt if we can accommodate I-280 entry

NB Off-Ramps

- doubt if we can accommodate I-280 exit and a exit to Airport?

MRN-101 (MTC – subordinate to county/Ct comments)

- Scale of map makes this section difficult to read. Provide more detail in future maps?

SON – 101 (SCTA)

The preliminary locations shown for 101 in Sonoma County are reasonable.

- Access north of Santa Rosa allows for traffic generated from eastern and western Sonoma County cities and Airport Business Park
- Access in southern Santa Rosa allows for traffic generated in Santa Rosa and is only location that allows for 1,500 ft transition zones
- Access locations north and south of Petaluma are reasonable
- Access frequency (5 to 10 miles) is reasonable
- Bellevue and Hearn interchange modifications (S. Santa Rosa) could impact access locations due to limited distance between interchanges. Ultimate spacing will be less than 1 mile.
- Land use considerations:
    - New hospital site possible at US 101 and Mark West Springs Road north of Santa Rosa
    - Proposed casino off Wilfred Ave in Rohnert Park. Forecast to generate 18,000 daily ADT
    - Dutra Asphalt Plant at Petaluma Blvd South I/C – construction 2009
- See list of projects

SM-101 (MTC – subordinate to county/Ct comments)

- SB off in San Mateo might be moved south to serve Rte 92/San Mateo Bridge and in Redwood City to serve Rte 84/Dumbarton Bridge. Please take a closer look at this. (MTC – subordinate to county/Ct comments)
- NB on in San Mateo might be moved south to serve Rte 92/San Mateo Bridge and in Redwood City to serve Rte 84/Dumbarton Bridge. Please take a closer look at this. (MTC – subordinate to county/Ct comments)
- Northbound and Southbound US 101: Missing HOT lane section between SR 84 (Woodside Rd.) and SM/SCL county line. (Ct D4)

SCL-101 (MTC & Caltrans)

- Northbound US 101: The egress in Gilroy is fairly close to the start of the HOT lane at SR 25 and may not be practical. (Ct D4)
- Southbound US 101: The ingress in Gilroy is fairly close to the end of the HOT lane at SR 25 and may not be practical. (Ct D4)
- In Santa Clara County, on US 101 and SR 85: Should coordinate with VTA on the locations of the ingress and egress from their HOT lane study. (Ct D4)

VTA Comments

SB On-Ramps

- Would move entry north to south of Leavesley Rd.

SB Off-Ramps

- north of Cochrane
- north of Leavesly Rd.

NB On-Ramps

- south of Dunne Ave.

SCL-237 (MTC – subordinate to county/Ct comments)

- May not need EB off before 101. There is no interchange here and distance from start of HOT is relatively short.

VTA Comments

SR 237/I-880 is a carpool-carpool direct connector location

EB On-Ramps

- add entry for SR 85, high volume from SR 85 to SR 237 to golden triangle area, major employment area, location for potential carpool-carpool direct connector in future
- 1st entry should capture US 101 and Mathilda Ave (can use the location where current carpool lane starts)
- add entry for Lawrence Expressway
- add entry for Great America (amusement park, future stadium for 49ers)
- ensure entry for Zanker Road, First Street combined

EB Off-Ramps

- add exit for Lawrence Expressway
- add exit for Great America (amusement park, future stadium for 49ers)
- don't know if exit for I-880 SB is needed, maybe back tracking, low volumes?

WB On-Ramps

- add entry for Lawrence Expressway
- add entry for Great America (amusement park, future stadium for 49ers)

WB Off-Ramps

- add exit for SR 85, high volume between SR 85 to SR 237 to golden triangle area, major employment area, location for potential carpool-carpool direct connector in future
- add exit for Lawrence Expressway
- add exit for Great America (amusement park, future stadium for 49ers)

SCL-280 (MTC & Caltrans)

- May want NB on closer to 880/17 interchange (MTC – subordinate to county/Ct comments)
- Northbound I-280: There should be an ingress downstream of I-880/SR 17 interchange for vehicles coming from these routes. (Ct D4)
- Southbound I-280: There should be egresses just upstream of I-880/SR 17, SR 87 and US 101 interchanges for vehicles heading to these routes. (Ct D4)
- Southbound I-280: There should be an ingress just downstream of I-880/SR 17 interchange for vehicles coming from these routes. (Ct D4)

VTA Comments

NB On-Ramps

- 1st entry for US 101 (ok), better closer to 24th Street/Mc Laughlin Ave., congestion near 10th Street
- 2nd entry for SR 87 appears to be close to I-880 where the existing carpool lane begins. This is also a location where there is congestion during PM peak. I would locate either an additional entry or relocate existing entry between Bird Ave. and Meridian Ave.
- There is potential to relocate 2nd entry further west or add an additional entry west of I-880.
- 3rd entry should be located between Saratoga Ave. and Lawrence Expressway
- Add entry to capture Lawrence Expressway (via Stevens Creek Boulevard) or relocate 3rd entry west of Stevens Creek Boulevard to capture San Tomas Expressway (via Saratoga Ave.), Saratoga Ave. and Lawrence Expressway
- 4th entry for SR 85 (ok)

NB Off-Ramps

- 1st exit to US 101 (ok)
- 2nd exit should provide for 11th/10th St. (San Jose State University) and SR 87
- 3rd exit for I-880/SR 17 ahead of the bottleneck near I-880Add exit for San Tomas Expressway/Saratoga Ave./Lawrence Expressway
- 4th exit for SR 85 (ok)

SB On-Ramps

- 1st entry for SR 85 (ok)
- Add entry for Lawrence Expressway? too close to Saratoga Ave?
- 2nd entry for Saratoga Ave. and San Tomas Expressway
- Add entry for I-880/SR 17
- 3rd entry for SR 87 (ok)
- Add entry for 10th Street/SJSU
- 4the entry for US 101 (ok)

SB Off-Ramps

- 1st exit for SR 85 (ok), consider distance for future ramp meter implementation at system interchanges
- have exit - either one or two to cater for Lawrence Expressway, Saratoga Avenue (San Tomas Expressway)
- add exit for I-880/SR 17
- add exit for SR 87
- add exit for US 101

ALA 580/238 (ACCMA)

- EB and WB: Provide access to/from I-580 [at 238 split]
- I-580 from Greenville to San Joaquin County Line is missing

CC-680 (CCTA)

- Conceptual access/egress locations on I-680 make sense (Martinez, Pleasant Hill/Concord, Walnut Cr (south of 24), Danville and San Ramon make sense, but see detailed notes on constraints
- Major activity centers at:
  - Waterfront Road (County seat and refinery)
  - between Concord Ave and Willow Pass Rd (offices, shopping and downtown)
  - between Monument and Treat; between North Main and South Main (Walnut Creek and SR 24 access)
  - between Crow Canyon and Bollinger (Bishop Ranch office park with 25,000 employees and new mixed use dvpt.)
  - Sycamore and Diablo are access points to thousands of housing units and may warrant access/egress particularly in NB direction
- Note direct HOV connectors planned to Bishop Ranch at Norris Canyon. Could provide some access/egress for San Ramon
- See note above about continuous access

ALA-680 (ACCMA)

- SB & NB: agree with access from/to the I-580/I-680 I/C. Coordinate with current studies
- SB: agree with access to/from Sunol and Bernal
- NB: agree with access to/from Mission 262, Mission 238, Sunol and Bernal

ALA-680 (MTC & Caltrans)

- Number of NB access/egress seems out of proportion compared to SB planned locations. (MTC – subordinate to county/Ct comments)
- Probably need to include NB egress south of US 101 (MTC – subordinate to county/Ct comments)
- Northbound I-680: There should be an ingress just downstream of SR 237 (Calaveras Blvd.) interchange for vehicles coming from this route. (Ct D4)
- Northbound I-680: There should be an egress just upstream of the SR 237 (Calaveras Blvd.) interchange for vehicles heading to this route. (Ct D4)

SCL-680 (VTA)

SB On-Ramps

- Calaveras Blvd (extension of SR 237)
- Montague Expressway
- Berryessa Rd.

SB Off-Ramp

- Montague Expressway
- Berryessa Rd.
- Capitol Expressway

NB On-Ramps

- Montague Expressway
- Berryessa Rd.
- Capitol Expressway

NB Off-Ramps

- Calaveras Blvd (extension of SR 237)
- Montague Expressway
- Berryessa Rd.

ALA-880 (ACCMA)

- Correct typos to panel 2 (SB off) and panel 3 (NB on) and recommend several adjustments
- Would access be provided to I-880 NB approaching the Bay Bridge? The HOT lane should be included on this section
- Southbound I-880 HOT access south of SR92 should be further north to capture traffic from SR 92
- Southbound I-880 HOT egress in Fremont/Milpitas area should at two points – before SR 262 and after Dixon Landing Rd
- Northbound HOT egress in Fremont/Milpitas should be before SR 262
- Volumes at 880/101 probably suggest a southbound HOT egress point [north of interchange?]. This would also serve the San Jose airport
- Additional access locations are desirable and will be required by locals
- NB and SB: Provide access to/from 98th Ave serving Oakland Airport and Coliseum
- Display should extend up to I-880/I-580/I-80 I/C (even if HOT lane terminates at Hegenberger) to give better overall context for the corridor

SCL-880

- Need to provide SB off before SR 237 and before US 101. Latter is a challenging interchange (MTC – subordinate to county/Ct comments)
- Southbound I-880: There should be an egress upstream of the US 101 interchange for vehicles heading to this route. (Ct D4)

VTA Comments

SB On-Ramps

- ensure 1st entry caters for Montague Expressway as well or add another entry, check vols for EB SR 237 to SB I-880, maybe low, back tracking
- add entry for Coleman Ave - feeds Mineta San Jose Airport
- add entry for SR 237 HOT connector

SB Off-Ramps

- exit for Montague Expressway
- exit for 101 after Brokaw Rd.

NB On-Ramps

- add entry for San Tomas Expressway/Camden Ave.
- add entry for Coleman Ave - feeds Mineta San Jose Airport
- add entry for Montague Expressway

NB Off-Ramps

- add exit for Coleman Ave - feeds Mineta San Jose Airport
- add exit for Montague Expressway